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GENERAL VIEW OF BATAVIA SEWAGE DISPOSAL WORKS UNDER CONSTRUCTION

Imhoff tanks in foreground; sprinkling filter in left background.

## BATAVIA SEWAGE DISPOSAL PLANT

Twelve Imhoff Tanks and Sprinkling Filter—Dosing Tank With Flushing Siphon—Sludge Bed—Pumping Plant—Details of Construction—Cost of Plant

BATAVIA, N. Y., is a village with a population of about 12,000, covering an area of four square miles. In the fall of 1909 it began the construction of a sewerage system comprising 32 miles of separate sewers, a pumping station and a disposal plant. This work was described by R. L. Fox, assistant engineer to the Batavia Sewer Commission, in a paper printed in the *Cornell Civil Engineer*, the official organ of the Association of Civil Engineers of Cornell University; which article, considerably condensed except the description of the disposal plant, is given herewith, together with the accompanying illustrations.

The area occupied by the village is in general quite level, and it was necessary to lift the sewage against a total head

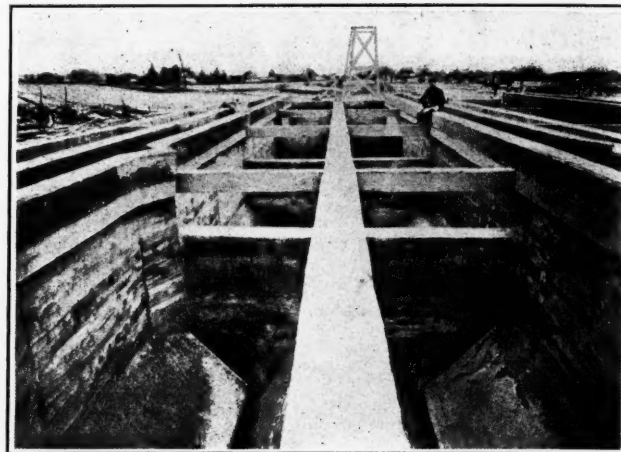
of 64 feet in order to raise it to the elevation of the disposal works. The force main consists of 4,200 feet of 16-inch pipe.

The pumps are Morris single stage, submerged, vertical centrifugals, one of 470 gallons and two of 1,050 gallons per minute capacity. Each of these is in a separate pump chamber in a pump well which is cylindrical in shape, 30 feet in diameter and 27 feet deep. The bottom of the well is in addition divided into two screen chambers and one intake chamber. The well is divided horizontally into three floors, the six chambers just referred to being in the bottom one of these. The pump shafts extend upward to the second or basement floor, where they are driven by a 100

horsepower Corliss steam engine located on the ground floor, the power being transmitted by the Dodge system of rope transmission. When the sewer system is in complete operation the small pump and one large one will handle the present maximum flow. The pumps are not in dry wells, but the pump chambers are so arranged that that containing any one pump can be shut off and pumped dry when it is desired to overhaul the pump. The steam engine furnishing the power is located on the upper or ground floor and is set parallel with an engine used by the village for operating their dynamos, which latter engine can be used to drive the pumps in an emergency. About 12 feet above the bottom of the pump well an emergency pipe leads to a creek which is about 50 feet away, and if the entire plant should be out of service for any reason the sewage would fill the well up to this point and overflow into the creek.

On leaving the force mains the sewage enters a trough, flows over submerged weir plates and across four tanks with V-shaped troughs, where the suspended matter is to settle, slide down inclined planes, through a six-inch slot and into the digesting chamber to form the typical Imhoff sludge. The liquid, after depositing a greater portion of the suspended matter, flows over a weir into a trough similar to that by which it enters. This trough conducts it either to a by-pass, which will permit it to enter the effluent sewer direct, or through a gate to the dosing tank. At the dosing tank the sewage is intermittently dosed onto the sprinkling filter, where it finds its way to the under drains and thence to the effluent sewer, where it flows 4,200 feet to the creek.

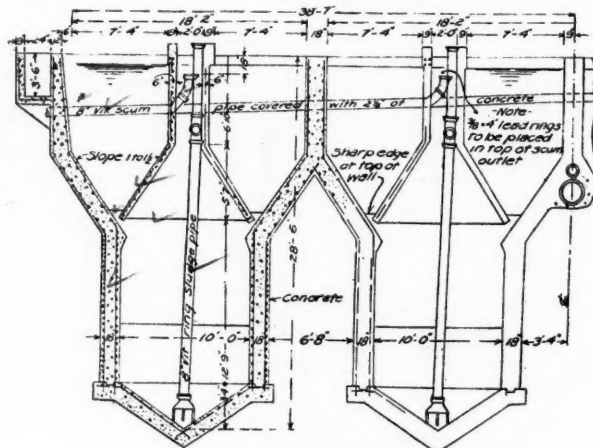
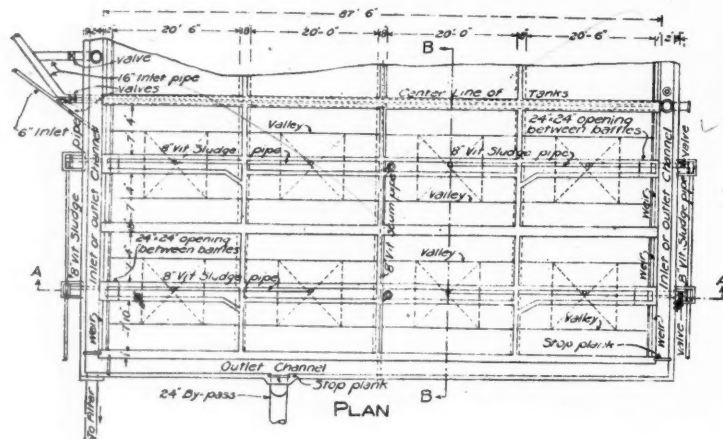
The Imhoff tanks used in Batavia are rectangular in shape, with V-shaped channels, hopper bottoms and built in parallel tiers. There are twelve tanks forming a rectangle, with a trough at each end. Each of these troughs may act either as inlet or outlet—i. e., the flow can be re-



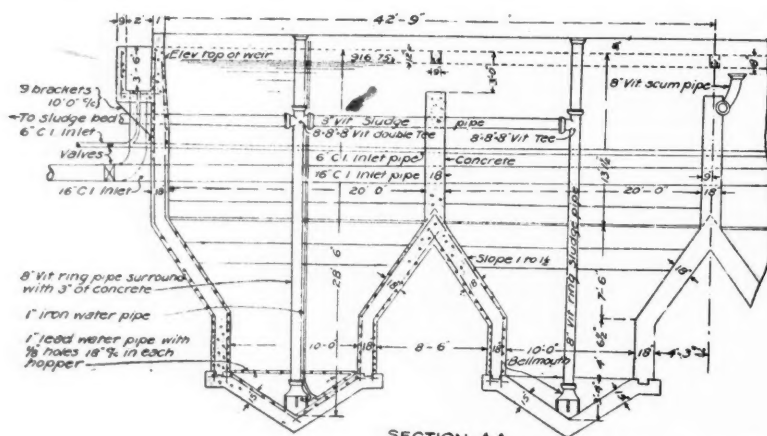
IMHOFF TANKS COMPLETED.

versed at any time. There are three tiers, so that the sewage flows across four tanks for sedimentation. Each tank has a depth of 27 feet 6 inches below the flow line, which includes a digesting chamber 10 feet by 10 feet at the bottom and 10 by 20 feet at the sludge slot, with a depth of 16 feet intervening. The upper part of the tank is divided into two V-shaped troughs, the troughs being separated by a space of two feet to form the gas slot through which the gases formed in the sludge digesting chamber escape without passing through the flowing liquid.

From the bottom of each tank an 8-inch pipe extends vertically upward to within four feet of the flow line. Here is located a tee from which the pipe extends horizontally outward through the wall of the tanks to a valve chamber and thence to the sludge bed. At the bottom a one-inch perforated lead water pipe is laid, through which water is to be emitted under pressure to stir up the sludge when



SECTION BB



SECTION AA

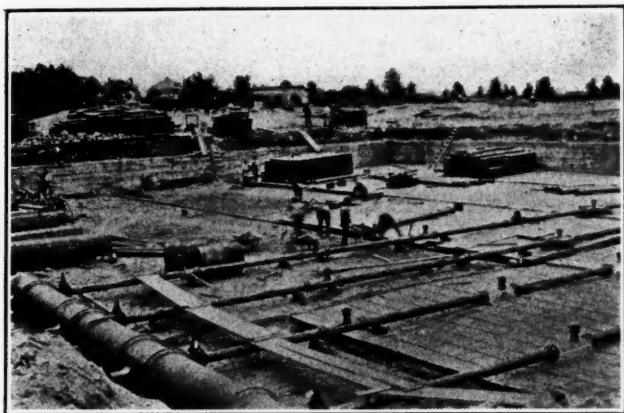
PLAN AND SECTIONS OF IMHOFF SETTLING TANKS.

the contents at the bottom is to be discharged onto the sludge bed, which is effected by the water head of four feet.

Each tank is supplied with a scum pipe leading to the sludge bed. All vertical walls under the flow line are brought up to a sharp edge to prevent sludge from accumulating. At the inlet and outlet ends of each tier of tanks an opening is provided between V-troughs to keep an equilibrium of flow. The slope of all inclined planes is 1 to 1½. The tanks are constructed of reinforced concrete throughout.

The dosing tank is 16 feet by 16 feet





SPRINKLING FILTER DURING CONSTRUCTION.  
Showing floor of drainage tile and sprinkler piping.

and  $5\frac{1}{2}$  feet in depth below the discharge line. A 24-inch Miller siphon discharges the liquid into a 30-inch pipe which leads to the pipe gallery. This siphon is designed to discharge the sewage onto the filter under normal heads at the siphon of from  $7\frac{1}{2}$  to  $2\frac{1}{2}$  feet above the sprinkler nozzles.

The filter consists of one unit 105 feet by 135 feet. The leaders from the pipe gallery are six-inch, with three-inch risers. These leaders are laid on top of the floor formed by the under drains, which are similar in form to building tile. These drain into concrete under drains and thence to one main drain, which carries it to a special manhole at the end of the effluent sewer. This special manhole is arranged to form a running trap and so that a blower can be inserted to supply ventilation to the under drains.

The filtering material is six feet in depth and consists of two-inch broken limestone. There are 77 Taylor nozzles capable of discharging at the rate of thirty million gallons of sewage in 24 hours per acre.

The walls are built of monolithic concrete, with three-inch farm tile drain inserted at intervals for ventilation. The unit built has three-quarters of its side walls beneath the ground level. It is expected that it will be necessary to force air into the under drains. The extreme low temperature to which this filter will be subjected will be about minus 15 degrees F. for the surrounding air.

The sludge bed is 150 feet by 30 feet and is surrounded by a concrete wall. One wall supports a semi-circular trough which carries the sludge, and with suitable stop boards the sludge can be deposited on any portion of the bed. The under drains are three-inch farm tile drain leading to an eight-inch main under drain, which runs lengthwise of the bed. The filtering material is built up with a five-inch layer of limestone one inch to two and one-half inches in diameter, five inches varying from one-quarter of an inch in size, and the upper two inches of coarse sand and fine gravel.

The excavation for the tanks was done by teams and drag scrapers. Work was commenced in April, 1911, and completed the first of January, 1912.

The contract for the disposal works was let for a lump sum of \$42,145, divided as follows:

Preliminary settling tanks.....	\$21,180
Sprinkling filter .....	19,066
Sludge bed.....	1,539

The work is being constructed by a board of five sewer commissioners, with Rudolph Hering as Consulting Engineer and Chas. Hoopes as Resident Engineer.

#### IMPROVED ROADS IN THE UNITED STATES

THE director of the Office of Public Roads, Logan Waller Page, has issued a report giving figures which are believed to include all the roads built in the United States up to the year 1909. According to these figures, there were in 1904 2,151,379 miles of public roads in the country,

while in 1909 these had increased to 2,199,645 miles, an average increase of 9,653 miles a year. To render these figures appreciable, it is stated that it would require 65 years to cover these roads in an automobile traveling 90 miles every day.

Only a small percentage of these roads are improved, however. In 1904 the percentage was 7.14 and in 1909 it was 8.66. In 1909 there were 59,237 miles of stone roads, 102,870 miles of gravel roads and 28,372 miles of sand, clay, brick, bituminous macadam and other improved roads. The mileage of improved roads in 1904 and 1909 in the eight States having the greatest mileage in the latter year is given in the following table:

	1904.	1909.		1904.	1909.
Indiana .....	23,877	24,955	Kentucky .....	9,486	10,114
Ohio .....	23,460	24,106	Illinois .....	7,924	8,914
New York ..	5,786	12,787	California .....	8,803	8,587
Wisconsin ...	10,633	10,167	Massachusetts	7,843	8,463

#### MOVING HOUSES IN STREETS

Right of Municipalities to Regulate Use of Streets for This Purpose—Rulings of Courts in Various States

By JOHN SIMPSON.

THE question of the right of municipal authorities to regulate the use of their streets for the removal of houses is one which has come up in the courts very frequently and such a right has as a rule been admitted. Involved in this question is another—whether the use of the streets for such a purpose is an ordinary or an extraordinary one, and it has usually been held that it is an extraordinary use, though there is authority to the contrary. The principal cases on the point may be briefly reviewed.

In Indiana it has been held that an ordinance calling on street railroad companies temporarily to raise their wires to permit a house to be moved thereunder is not a technical taking of property by eminent domain, though expense be caused, and that "as it is convenient and customary to move buildings along public ways" a city should have the power to reasonably regulate the matter.—*Indiana Ry. Co. v. Calvert*, 168 Ind. 321.

An earlier Indiana case, however—*Williams v. The Citizens Ry. Co.*, 130 Ind. 71—held that the moving of a house along a public street of a city is an extraordinary use thereof for an unusual purpose, which may be controlled or denied, and the owner of such a house cannot insist on so moving it if such moving will result in the destruction of the property of others. The courts, it was held, may restrain the moving of a house across a street electric railroad when such moving will result in the stopping of the cars an unnecessary length of time, and the cutting or destruction of the wires, even though the common council of the city has failed or refused to take any steps to prevent such injury or destruction.

In *Dickson v. The Kewanee Electric Light & Motor Co.*, 53 Ill. App. 379, it was held that moving a house along a public street is not within the rights enjoyed by the public, as a use of the public streets.

In Massachusetts a statute—Pub. St. c. 109, sec. 17—permits the cutting of telegraph and telephone wires after a required notice in order to move a building or for any necessary purpose, and this was extended by St. 1883, c. 221, so as to give the same rights in regard to electric light wires.

The holding in *Ft. Madison Ry. Co. v. Hughes*, 137 Iowa, 122, 126, is tantamount to holding that houses may be moved along streets where the conditions of these are such that it does not by interfering with the travel become a nuisance. But where the street is appropriated by a street railway company such moving is an unusual and extraordinary use, and where the house cannot be moved in the street without occupying the company's track, destroying the trolley line and interrupting for a consider-

able time the operation of the cars, the owner of the house is not entitled to take it into that street.

The North Dakota court holds that the use of streets for moving houses is not a usual, but rather an extraordinary one. It may be permitted by the municipal authorities under restrictions safeguarding the rights of the public as necessity may require; but in giving such permission the city cannot grant immunity from damages caused to the wires or other property of a telephone or other company authorized by ordinance to occupy the streets and between which and the city a contractual relation exists. *Northwestern Tel. Ex. Co. v. Anderson*, 12 N. D. 585. Practically to the same effect is *Kibbie Telephone Co. v. Landphere*, 151 Mich. 309.

The Minnesota court, in enjoining the owner of a house having a permit from the city containing the restriction, "This permit does not allow interference with wires or any other obstructions on the above route," from interfering with the wires of a light and power company except upon reasonable notice and the execution of an indemnity bond for the expense occasioned thereby, holds that neither the erection of poles and wires in the streets nor the moving of houses along streets are among their ordinary uses. But it was not held that the city authorities could not by a proper permit give the owner of the house the right to require the power company at its own expense to open the wires, upon reasonable notice, to allow the passage of houses in the streets.—*Edison Electric Light & Power Co. v. Blomquist*, 110 Minn. 163.

A municipality empowered by its charter to make orders relative to the removal of obstructions and nuisances in highways and "the removal of buildings upon or through the same" and to license such removal may make ordinances providing for the obtaining of a permit designating the streets to be used in such removal. An owner obtaining such a permit must complete the work of removal within a reasonable time. If he does not do so and the building is allowed to remain in the street so as to obstruct travel and become a public nuisance the city itself may, after notice to the owner, destroy or remove it. To do so is a plain duty which it owes to those who have occasion to use the street. In so doing they must proceed in a way which shall not be so unreasonable or unjust as to be inconsistent with law. *Keating v. Macdonald*, 73 Conn. 125. The municipality may, where authorized by statute, recover from the owner of a building which has become an obstruction in the street the cost of its removal, and this even if they do not entirely remove the building from the highway, but only so as to cause it to be less of an obstruction than before. The owner of a building contracted for its removal to another location several miles distant and the contractor left it in the middle of the highway, the timbers having given way. After it had remained for more than a month a serious obstruction to travel, and the contractor had abandoned his contract after some effort to continue the work of removal, the commissioner of highways served a notice on the owner and moved the building partly out of the highway. The owner was held liable, being bound to care for the building after the contractor's abandonment. *Caldwell v. Town of Preemption*, 74 Ill. App. 32, so where an owner without lawful authority moved a building into the public highway making the street impassable to teams, the municipality was bound by law to restore the street and make it passable, and for neglect to do so was liable under the statute to fine, and primarily liable to any traveler injured in consequence of the obstruction. The measure of damages which the city is entitled to recover from the owner is the reasonable cost of restoring to use and making passable the street, or, in other words, of removing the building. *Conend v. Burleigh*, 67 N. H. 106. The Utah Supreme Court holds that the usual law of the roads does not apply to buildings that

are being moved through a public highway. The moving of a building through a street is not an ordinary or usual use of the street, and the owner cannot claim the privilege so to use it as a matter of right; though it has been said that if it were a common usage in a municipality so to use a street it might be claimed as a matter of right. It would seem impossible, said the court, to lay down any general rule as to when such use should be allowed, because no such rule could be established as would meet the emergencies of individual cases. Very much must depend upon the locality; the width of the street; the injury, if any, it will be likely to cause to other property; the time when such use of the highway is to be made; and the obstruction it will offer to ordinary travel. No human foresight could, with any degree of accuracy, determine and schedule the occasions and circumstances which would entitle a citizen to use a highway in an extraordinary manner by moving a building into and upon the same. No right, however, exists at common law in an owner to move a building into and upon the streets of a city without any restraint or control. Therefore, an ordinance prohibiting such moving of buildings without permission does not deprive the citizen of his property without due process of law, or deny him the equal protection of the laws in violation of Art. 14, Sec. 1 of the United States Constitution. *Eureka City v. Wilson*, 15 Utah, 53. Whether a City Council, which is authorized by statute to regulate the use of the city streets and prevent obstructions being placed thereon, may delegate to an officer the power to grant permission, upon application, on proper occasions, to move buildings through the streets, has been contested more than once. The Utah court holds that it may, the Massachusetts court holds otherwise, *Day v. Green*, 4 Cush. (Mass.) 433. In this case a by-law of the city prohibited the moving of buildings through the public streets without a license granted by the Mayor and Aldermen. It was held that the Board of Aldermen could not delegate to the Mayor alone the power to grant such licenses according to his views of expediency, although he was the constitutional head of the Board. In a case where a house being removed by a contractor broke down and obstructed a street railway company's tracks for two days, the company recovered damages, both the owner of the house and the contractor being held liable. *Toronto Street Ry. Co. v. Dollery*, 12 Ont. App., 679. In this case it was held that the moving of a building along a highway is a legitimate use of the highway, not requiring, in the absence of a by-law, the assent or permission of the municipal authorities.

The owner of a house in the city of Olean, N. Y., procured from the city leave to move it and was preparing to do so when a traction company obtained a preliminary injunction restraining him from interfering with its wires and overhead construction. This injunction was vacated for the reason that the traction company's rights in the street were subject to the reasonable use thereof by the public for travel and other purposes, and that it could not be said that in all cases the moving of buildings through streets is a reasonable or unreasonable use thereof. *Western N. Y. & P. Traction Co. v. Stillman*, 12 N. Y. Supp. 363. The case of *Heinman v. Clark*, 121 N. Y. App. Div. 105, affirming 193 N. Y. 640, held that an ordinance requiring the permission of the Department of Works for the moving of a building merely limited the common law right of such use of the streets to those cases which the department approved in the exercise of reasonable discretion and was not a delegation of legislative powers. An owner who had obtained the permission and had begun to move a building in reliance on the license could not be prevented from going on with the work by an attempted revocation of the license made at the instance of adjoining owners, there being no charge of improper or unwarranted

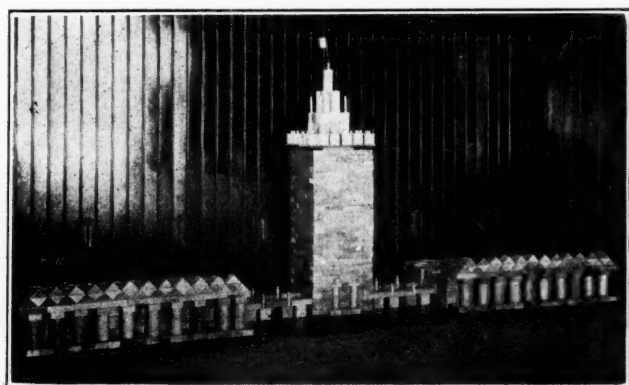


use of the streets. Where a city sold a building at auction no stipulation could be implied from the sale, any more than in the case of a sale by an individual, that the city officers having charge of the streets should grant a license to remove the building through the public streets, and a statement made by the auctioneer, as an inducement to purchase, that the building was suited for tenement purposes and could be removed for that purpose was a mere statement of opinion. *Woodward v. Boston*, 115 Mass. 81.

A federal court has recently come to the conclusion that the use of a public street for the moving of buildings is an extraordinary use for the sole benefit of the owner and not an ordinary use for the benefit of the public. The occupation of a public street by a house that is being moved was considered by the court to be similar in its nature to the occupation of a street by a deposit of building material. Both are obstructions to the street; both are done under the permission of the City Council; both can be prohibited by the City Council. In this case the City Council of St. Paul had passed an ordinance requiring public service companies at their own expense to remove or displace their wires lawfully in the street when a licensed house mover, who had procured a permit from the city authorities to move a house through the streets, requested them to do so; and a light and power company had filed a bill in equity to restrain a house mover from interfering with its wires in the streets of the city and to restrain the city authorities from enforcing the ordinance. The court granted a temporary injunction—*Edison Electric Light & Power Co. of St. Paul v. Blomquist*, 185 Fed. 615.

#### MUNICIPAL CHIMES FOR SPRINGFIELD

THE city of Springfield, Mass., is building a municipal group of buildings consisting of a tower, auditorium and office building, the total cost of which will be nearly \$2,000,000. It is proposed to have a set of chimes in the tower, a custom which is quite common in England, but which, so far as known, has been adopted by no city in the United States. The money for the chimes is being raised largely by the school children of the city, although the Board of Trade is co-operating in the campaign for funds and public-spirited individuals have contributed a number of bells. Each child places his collection in an envelope, seals it and gives it to his school principal, who forwards it to the Board of Trade. In this way no child knows what another collects and there is no rivalry between individuals, rooms or schools. The illustration shown herewith is a photograph of a model representing the municipal group of buildings, which was constructed of kindergarten blocks and was one of the methods adopted for interesting and informing the pupils, models of cardboard having been constructed by other schools for the same purpose. The top of the tower shown in the illustration can be raised and the envelopes containing the collections be deposited therein. The model shown is 6 feet 4 inches long.



MODEL OF SPRINGFIELD MUNICIPAL BUILDING.

#### CLASSIFIED EXPENSE ACCOUNTS

Value of Expense Accounts—Fundamental Principles and Classification—Some Accounting Fallacies—Checking Accounts—Economy

THE Metz Fund of the Bureau of Municipal Research of New York has issued, as pamphlet No. 6 of its "short talks on municipal accounting," one entitled "Functional Expenses and Cost Accounts." As we have several times stated, we believe that this subject is of vastly more importance in proportion to the other elements of municipal accounting than the relative attention which it has received. This pamphlet does not go into the subject with a detail or treat it as definitely as we would wish, but its comments upon the importance of the subject and its outline of the requirements deserve careful consideration, and we produce extracts of them below.

The purpose of expense accounts is to produce information regarding current expenditures which is to be regularly reported to the responsible officers of government.

Scientific accounting of itself will not make administration efficient. There still may be waste, mismanagement and theft even with the facts accurately and scientifically recorded; but scientific accounting will *help* any officer who has the will and the ability to conduct his department with economy and efficiency.

The value of a correct system of expense accounting lies in making facts readily available by means of reports and in enabling officials to make comparisons which will lead to a study of the reasons for high costs if they are high—in short, to ascertain where savings may be effected, which employes have been efficient, which functions should be expanded, and which may be restricted. In other words, every administrative policy and every future act should be preceded by exact information of what has happened in the past.

Particularly is a classified record of expenses invaluable in the preparation of estimates to be used as a basis for future appropriations.

One of the fundamental principles underlying the scientific classification of expenses is that the greater the number of logical, *significant* divisions into which expenditures can be divided, the easier it is to understand where money spent has gone and to detect excessive expenditures meaning extravagance, waste or misappropriation.

A second fundamental principle is that expenses should be so classified that the cost of each function or division of organization and the several elements of cost comprised therein may be clearly shown.

How accounts should be classified must be determined by the facts to be reported. The form of the report should be determined by the needs of the officer for information. The needs of the officer for information in turn are fixed by his responsibility. The data needed by the officer for the intelligent discharge of his duties must be of two general classes:

1. Data showing cost of operation as measured by product or service.
2. Data showing cost in terms of things or services purchased or contracted for.

The accounts necessary to obtain the first class of information are what are ordinarily regarded as either classified expense accounts or job cost accounts.

The analysis of data necessary to the consideration of economy and efficiency of contracting and purchasing must be along lines of objects of expenditure or of services and things purchased and paid for—classifications which will enable the officer to think in terms of what the city buys, what it pays for it, and whether it is adapted to the use for which the purchase is made.

It is frequently the case that, in order to state functional costs in correct detail, it is necessary to gather together the various elements of the costs of repair or other jobs in order to arrive at a job or unit cost. In this event wages or salaries accrued are charged to a general account within the functional group. From this account they are apportioned to the various jobs according to time reports showing the exact time chargeable to each.

The other elements of job cost, such as materials, superintendence and incidental expenses, are also apportioned. Materials are chargeable to a material account within the functional group either from stores requisitions or purchase invoices, and thence apportioned to the various jobs according to work reports accompanying time reports.

Although we may determine with reasonable certainty the divisions which should be made in stating expenses, we shall not have an exact record of what has happened unless we are careful to enter expense charges as of the date they are applicable. Judging from published reports, few cities seem to appreciate the importance of this practice. They enter charges as of the dates cash is paid out, notwithstanding they were applicable to the month or perhaps the year previous to such dates.

This practice is sometimes defended on the ground that the amounts overlapping at the end of the year will balance similar amounts at the beginning of the year. Obviously this is unscientific; but, granting that in many instances the yearly totals will not vary materially, there are many instances in which conditions affecting payments at the end of the year differ widely from those at the beginning of the year. The only way to be right is to employ right methods.

Moreover, yearly reports are no longer found to be sufficient. Efficient administration requires reports at least as frequently as once a month. Therefore, unless charges are entered according to the month in which they apply, there is never any certainty that there is a correct basis for administrative judgment or for comparison with other periods.

Another practice which is calculated to interfere with the ascertainment of correct statements of expense is that of buying supplies in quantities sufficient for more than a month and charging them direct to specific expense accounts. It is more economical, of course, to buy supplies and materials in large quantities, and this should be done whenever possible. In this event, however, they should be charged to a *stores account*. As supplies are required for consumption they should be obtained from stores on requisition, such requisition to cover not more than a month's needs. These requisitions may then be embodied in a report made at the end of the month by the person in charge of the stores. Charges to expense accounts may be made either from this report or from the individual requisitions.

It is highly important that there be means for determining currently the correctness of expense accounts; otherwise errors which may seriously effect administrative and financial judgment are certain to creep in. This may be done by (1) charging all items of expense to a single controlling account in the general ledger through the medium of a column in an invoice or voucher register in which transactions are entered chronologically, (2) posting the monthly total of the column to the ledger, then (3) posting the items to a subsidiary record containing the detailed accounts.

This subsidiary record may be designed on the columnar principle, by which a number of accounts may be kept on one page by means of columns, or on the unit or block principle by which a separate page is assigned to each detailed expense account. Under the first method the division or function is entered at the top of the page; the date, number, brief description and total amount of the item or charge are entered at the left, and the amount or

amounts extended on the same line into columns headed with the detailed accounts.

By the second method the date, number, brief description and amount of the item are entered on a separate page which contains the detailed account, the divisions or functions being indicated by marginal thumb tabs. At the end of the month a schedule of the balances or trial balance of the subsidiary record must agree with the balance of the controlling account previously mentioned.

It must not be inferred that the keeping of many expense accounts as is here advocated necessarily involves additional labor, once the headings of the accounts are written. It entails practically no more work to post a charge to a detailed account than to a general account. On the other hand, the labor saved at the end of a period by not having to analyze or re-classify expenses is often considerable.

The story of what government costs is not fully told when a report of expenses by functions is made. The officer and the public can think more clearly in terms of the cost of specific *units* of service. What it costs to keep the pavements in repair is best answered by the cost of repairs per square yard. Waste can be more quickly located when unit costs are known. To ascertain unit costs it is necessary to keep physical records, that is, records of the physical things done or service rendered. The answer, then, as to whether administration has been efficient or inefficient is found in contrasting cost with service results and judging the accomplishment by the best standards obtainable.

How can a city tell whether its expenditure for a given public service performed is more or less than it should be? One of the best ways is to compare its expenditure with that of other cities. But, obviously, a comparison cannot be made without taking into consideration the results, expressed in terms of quantity, derived from the expenditure. This necessitates reducing costs to a comparable basis, which is done by dividing the total cost by the number of work units and finding the cost per unit or unit cost. For example, the total amount spent for direct labor, material and superintendence in laying 100,000 square yards of stone block pavement is found by a carefully kept record to be \$189,675. By dividing this amount by 100,000 we find that the cost per square yard is \$1.89. If we found that it was costing \$1.69 in another city, or that it cost us only \$1.79 in a previous period, we would immediately begin to look for the reason for the increase. It may be that in the other city the lower cost is accounted for by cheaper labor or cheaper material, or both. Possibly in a previous period material was cheaper. At all events the spirit of competition and emulation enters and there is a constant incentive to do things economically.

#### Concrete Lamp Standard



We show herewith a photograph of a concrete lamp standard in the city of Bryan, Tex., which was furnished us by A. B. Carson, the city engineer. This standard was cast in a timber form, which was made by a local carpenter, and the cost to the city was about \$8 each, exclusive of the wiring, etc. The wiring was done by the city electrician, and this and the other work connected with the standards brought the total cost of these to about \$18 apiece in place. They have been in use about six months and are said by Mr. Carson to be perfectly satisfactory.



## CONSTRUCTION WORK DURING 1911

In our issue of January 4 we presented tables showing construction work done and apparatus purchased in 1911 by 352 cities, and that contemplated for 1912. Since then

we have received data from 33 additional cities, which we have tabulated as shown below. This brings the total to 380 cities which have sent us special official reports.

TABLE No. 1—CONSTRUCTION WORK DURING 1911.

Name of city.	Streets.			Water works.				Sewer system.	Other construction work.
	Grading.	Pavements.	Sidewalks and curbs.	Mains, etc.	Meters.	Pumping plants.	Reservoirs.		
<i>Arizona:</i>									
Douglas .....	\$1,500		\$2,500	\$35,000	\$1,500	\$25,000	\$5,000	\$6,000	
Nogales .....								50,000 <sup>2</sup>	
<i>Connecticut:</i>									
Hartford .....	20,988	151,777	9,900	120,000	7,800			111,500	
<i>Illinois:</i>									
Belleville .....		\$80,000	10,000						
<i>Indiana:</i>									
Fort Wayne .....		244,936	56,374	31,537	12,000	7,000	300	7,279	
<i>Kansas:</i>									
Kansas City .....	101,965	293,036	88,760						
Lawrence .....			113,625					38,467	
<i>Kentucky:</i>									
Ashland .....		1,200							
Owensboro .....	2,300	15,000	10,000					3,000	27,000 <sup>1</sup>
<i>Maine:</i>									
Lewiston .....		10,000	20,000					2,000	
<i>Missouri:</i>									
Carthage .....	14,500			2,000					
<i>Nebraska:</i>									
Beatrice .....				57,000 <sup>2</sup>					
Fairbury .....	1,000		500					2,500	
Fremont .....	500	10,988	7,060	700	2,200				\$16,000
Lincoln .....	5,292	230,445	19,337	29,659		3,000		57,000	
<i>New Jersey:</i>									
Millville .....			10,000						
<i>New York:</i>									
Carthage .....		1,600		1,500		1,500			
Little Falls .....		10,000	5,000						
Syracuse .....	13,666	76,885	29,158	40,000	11,000			30,000	
<i>North Carolina:</i>									
Winston .....	25,000 <sup>2</sup>			6,000 <sup>2</sup>				2,700 <sup>2</sup>	
<i>Oklahoma:</i>									
Nowata .....	170,000 <sup>2</sup>			75,000 <sup>2</sup>				1,000	
<i>Pennsylvania:</i>									
North East .....								10,000	
<i>South Carolina:</i>									
Rock Hill .....				5,000	3,000			32,000	
<i>Texas:</i>									
Brownsville .....			30,000			20,000	15,000		
Tyler .....	5,000		6,000	Private plant.					
<i>Utah:</i>									
Provo .....	2,000		1,943	99,898	300			83,366	
<i>West Virginia:</i>									
Bluefield .....	7,000	12,000	3,000					3,000	
<i>Washington:</i>									
Snohomish .....				110,000					

<sup>1</sup> Water softening plant. <sup>2</sup> Includes all kinds of work under this general head.

TABLE No. 3—FORECAST OF WORK TO BE DONE IN 1912.

Name of city.	Streets.			Water Works.				Sewerage.	
	Grading.	Pavements.	Sidewalks and curbs.	Mains, etc.	Meters.	Pumping plants.	Reservoirs.	Sewer system.	Treatment plant.
<i>Arizona:</i>									
Douglas .....	\$1,500		\$2,500					\$4,000	\$200
Nogales .....				\$60,000 <sup>1</sup>				50,000 <sup>2</sup>	
<i>Illinois:</i>									
Belleville .....		\$150,000	15,000					75,000	
<i>Indiana:</i>									
Fort Wayne .....		250,000	50,000	40,000	\$26,000	\$2,000		30,000	
<i>Kansas:</i>									
Kansas City .....	400,000 <sup>2</sup>								
Lawrence .....			100,000					44,000	
<i>Kentucky:</i>									
Ashland .....									
Owensboro .....		25,000 <sup>2</sup>						3,000	
<i>Michigan:</i>									
Alma .....									
Petoskey .....		15,000	10,000	10,000	1,000	5,000 <sup>5</sup>			
<i>Missouri:</i>									
Carthage .....	10,000	12,000	2,000	1,000				4,000	
<i>Nebraska:</i>									
Fremont .....	600	23,840	7,000						
Lincoln .....	5,000	250,000	20,000	50,000		25,000		25,000	
<i>New Jersey:</i>									
Millville .....			8,000						
<i>New York:</i>									
Carthage .....		50,000							
Little Falls .....		7,000	6,000	1,500					
Syracuse .....	15,000	100,000	30,000	40,000	10,000			60,000	
<i>North Carolina:</i>									
Winston .....	45,000 <sup>2</sup>			20,000 <sup>2</sup>				42,500 <sup>2</sup>	
<i>Oklahoma:</i>									
Nowata .....	75,000 <sup>2</sup>								
<i>South Carolina:</i>									
Rock Hill .....				10,000	1,500	5,000	\$5,000	15,000	42,000
<i>Texas:</i>									
Tyler .....	8,000	15,000	10,000	Private plant.					Private plant.
<i>Utah:</i>									
Provo .....	3,000		2,000	5,000	300				
<i>West Virginia:</i>									
Bluefield .....	15,000	60,000	6,000					15,000	10,000
<i>Pennsylvania:</i>									
Du Bois .....		20,000	5,000		2,500			4,000	
<i>Nebraska:</i>									
Fairbury .....	1,000		600			42,000 <sup>4</sup>		3,000	
<i>Texas:</i>									
Brownsville .....		60,000		15,000				20,000	

<sup>1</sup> City will buy out Nogales Water Co. and spend \$60,000 in improvements.

<sup>2</sup> Includes all work under this general head.

<sup>3</sup> City may purchase plant and spend \$90,000 on improvements.

<sup>4</sup> Construction probable; cost unknown.

<sup>5</sup> Wells with air lift.

<sup>6</sup> Water and electric plant just purchased at \$92,000, and \$42,000 being spent in improvements.

TABLE NO. 2.—APPARATUS PURCHASED IN 1911.

	Rollers, graders, scrapers, plows, etc., for street work.	Carts, flushers, brooms, sprinklers, etc., for street cleaning.
<i>Arizona:</i>		
Douglas .....	.....	\$650
<i>Indiana:</i>		
Fort Wayne .....	\$5,000	500
<i>Nebraska:</i>		
Fremont .....	300	200
<i>New York:</i>		
Syracuse .....	500	350
<i>North Carolina:</i>		
Winston .....	500	500
<i>Oklahoma:</i>		
Nowata .....	3,000	.....
<i>Pennsylvania:</i>		
North East .....	.....	140
<i>Texas:</i>		
Tyler .....	1,500	.....
<i>Utah:</i>		
Provo .....	100	10

TABLE NO. 4.—FORECAST OF PURCHASES OF APPARATUS IN 1912.

	Rollers, graders, scrapers, plows, etc., for street work.	Carts, flushers, brooms, sprinklers, etc., for street cleaning.
<i>Indiana:</i>		
Fort Wayne .....	\$11,000*	.....
<i>Missouri:</i>		
Carthage .....	250	\$250
<i>Oklahoma:</i>		
Nowata .....	2,000	.....
<i>Texas:</i>		
Tyler .....	10,000	.....
<i>Utah:</i>		
Provo .....	200	20

\*\$10,000 of this is for asphalt plant.

### PORTLAND CEMENT PRODUCTION

THE United States Geological Survey has issued statistics of the production of Portland cement in the United States during the year 1911, based upon returns from about 70 per cent. of the Portland cement manufacturers in the country. Based on these returns, an estimate has been made by Ernest F. Burchard, of the Survey, of the entire output for the year, which estimate is believed to be within 2 per cent. of the exact figures.

Approximately 77,877,236 barrels of cement were manufactured in 1911, which is an increase of only 1.7 per cent. over the figures for 1910, or less than the possible percentage of error. It may consequently be said that the production was the same as in 1910. Of this amount about 33 per cent. was produced in the Lehigh district of eastern Pennsylvania and New Jersey. Illinois and northwestern Indiana produced the next largest amount, about 11 per cent. of the whole. The several districts of Ohio and western Pennsylvania, Iowa and Missouri, the Great Plains States and the Pacific Coast States each produced between 6,000,000 and 7,000,000 barrels during the year. The highest price was received by the Pacific Coast States, an average of \$1.407, per barrel and the lowest by the Lehigh district, \$0.763 per barrel. The average price for the entire United States was \$0.867, which is a reduction of about 2½ cents from the price of 1910.

### GARBAGE DISPOSAL IN CONNECTICUT

MAYOR CHAS. E. ROWELL, of Stamford, Conn., has collected some information, by correspondence with the largest cities of that State, concerning the methods and costs of collecting and disposing of the city's refuse, the cities from which reports were received being New Haven, Bridgeport, Hartford, Waterbury, New Britain, Meriden, Stamford, Danbury, New London and South Norwalk.

In New Haven, population 133,605 (this and the following population figures are from the 1910 census), two-thirds of the garbage is collected by contract and one-third by the city, the cost by contract being \$11,500, or 9 1-3 cents per capita, making the total cost about 14 cents per capita. The other waste is disposed of by the property owners at their own expense.

In Bridgeport, population 102,254, the garbage is col-

lected by contract at \$2.32 per ton and incinerated at a cost of \$1. The city does not collect ashes and other refuse.

In Hartford, population 98,915, the garbage is collected by contract for \$11,000 per year, or 11 1-9 cents per capita. The ashes are collected under a separate contract for \$22,000, making a total cost for both 33 1-3 cents per capita.

In Waterbury, population 73,141, the garbage is collected by contract, some being burned and some being fed to pigs. The cost to the city is \$12,000, or 16 1-3 cents per capita. Ashes and other rubbish are removed by the property owners at their own expense.

In New Britain, population 43,916, garbage is removed by contract for \$2,780, or 6 1-3 cents per capita, and is plowed into his farm by the contractor. Other rubbish is removed at the expense of the property owners.

In Meriden, population 27,265, garbage, ashes, paper and other rubbish are collected by contract at a cost of \$6,300, or 23.1 cents per capita.

In Stamford, population 25,128, garbage, ashes and other waste are collected by the city at an expense of \$21,352, or 84.9 cents per capita. In Danbury, population 20,234, the city collects no garbage or other waste; and this is the case in South Norwalk also.

In New London, population 19,659, garbage is collected by contract at a cost of \$2,500 and arrangements are made with farmers to take care of it. The cost per capita is 12.2 cents. Other rubbish is collected by the city under a separate contract for \$7,000, making the total cost per capita 48 1-3 cents.

### REPORT ON CHICAGO WATER WORKS

IN August, 1909, a commission on city expenditures was appointed in Chicago, the existence of which terminated in April, 1911. Meantime it presented 21 special reports to City Council, four of which had not been printed by it. These the Bureau of Public Efficiency has undertaken to print, and the first to appear is a report by Dabney H. Maury on the city's water works. This report is dated July 26, 1910, and since it was presented to council several of its recommendations have been more or less fully carried out. Certain of these improvements were referred to in our article of Dec. 21, 1911.

Among the recommendations is one that the valves on all mains 30 inches in diameter and over be smaller than the main, with properly designed reducers on both ends, which would give practically no increase in friction and would permit a saving of \$700 on a 48-inch valve.

The manufacture of valves and hydrants at the water works repair shop was reported to be inadvisable, as those turned out were of antiquated and defective type, and cost 70 to 100 per cent. more than the price of the very best valves and hydrants on the market. For valves under 14 inches in diameter cast iron valve boxes were recommended in preference to masonry valve basins.

As two-thirds of the water pumped was apparently lost by leakage and waste, Mr. Maury urged an immediate appropriation for pitometer surveys and for repairs sufficient to at once discover and repair all leaks, and thereafter an annual amount sufficient to care for new leaks. At the same time meters should be installed on all services.

Considering the cost of water to the taxpayers, the report gave, as the principal items of such cost, (a) rates, including fire protection; (b) extra insurance premiums caused by water works' deficiencies, and uninsured loss from the same cause; (c) cost of purification or payments by individuals for table waters, due to unsatisfactory character of supply; (d) sickness or death caused by the water; (e) insufficient pressure; (f) inability to secure extension of mains where needed; (g) indirect payments, as in the form of taxes.



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MARCH 7, 1912.

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### Municipal Cost Accounting

WE desire to call attention to the article on page 345  
briefly outlining the purpose and nature of functional ex-  
penses and cost accounts, as set forth by the Metz fund in  
a recent pamphlet.

Heretofore the chief aim in keeping municipal records  
has been to present proof that all sums received by munici-  
pal officials have been spent in a legal manner. It is main-  
tained, however, that if there were absolutely no use of  
public funds for any purposes which would not stand the  
most severe scrutiny, there would still be a loss to the tax-  
payers of hundreds of millions every year through ineffi-  
ciency of methods and of employees. Part of this loss is  
incurred by the carrying out of requirements of city char-  
ters, through the performance of unnecessary services and  
the duplication of others.

Probably the greatest loss, however, is due to inefficiency  
in the performance of the various functions of construc-  
tion and operation of public works; and one of the great

benefits to be derived from cost accounting is to determine  
just where these losses occur, and how they can be avoided.  
Too much public work is performed by following old  
routine and precedent, and there is too little effort made to  
learn whether more economical methods and appliances  
are not available.

Great difficulties have been experienced in evolving prac-  
ticable bases of comparison, and at first sight there appears  
to be considerable labor involved in so keeping municipal  
records as to permit of such investigations. But we be-  
lieve that both of these difficulties will very shortly be  
overcome, and that five years from now every progressive  
city will have introduced functional expense and cost ac-  
counting in most of its departments.

### Some Principles of Sewerage Design

THE report of the Sewerage Commission upon the prob-  
lem presented by the city of Milwaukee, the general con-  
clusions of which were referred to in our issue of Feb. 29,  
contains a number of features among its details which are  
of considerable interest. One of these is the quantity of  
sewage which the engineers, Messrs. Alvord, Eddy and  
Whipple, think it desirable to provide for. The maximum  
rate of flow of sewage at the present time is approximately  
250 gallons per capita per day, this including water used  
in manufacturing and ground water leaking into the sew-  
ers. The proposed sewer system is estimated of a capacity  
sufficient for the population and other requirements of the  
year 1950, and the maximum flow at that time is estimated  
at 350 gallons per capita per day. As the amount of  
ground water seepage per capita will probably be less  
rather than greater at that time, this indicates a belief in  
a very high rate of water consumption for domestic and  
manufacturing purposes 40 years hence. The importance,  
in their opinion, of manufacturing wastes in such a calcu-  
lation is indicated by the fact that more than three times  
as much sewage per acre is allowed for from the manufac-  
turing as from the residential areas.

In making provisions for the future, the engineers be-  
lieve that this should be governed to a great extent by the  
possibilities of gradual enlargement of capacity of the  
work in question. Thus sewers, the capacity of which can  
be increased only at great expense, they think should be  
designed for the probable needs of the city in 1950; while  
the sewage purification works, which can be easily enlarged  
by the addition of small units, they think should be con-  
structed at the present time for a capacity of only 15 or 20  
years in advance. An additional argument in favor of  
the latter is that our knowledge concerning purification  
methods is continually increasing, and it is very probable  
that improvements in details, if not in actual principles of  
operation, will be available by that time.

Another general principle followed in the design was  
that of mapping out a sequence of construction, designating  
what part or parts of the plan are most pressing needed  
immediately and what parts can be best postponed for sev-  
eral years, and making such minor modifications of the  
plan as would permit the work to be extended over a series  
of years and yet secure the maximum results from each  
structure as it came into service.

Concerning the purification of trade wastes the authors  
do not recommend complete purification in local plants as  
a general policy, although in some cases it may be desirable  
to partially purify such wastes before admitting them to  
the sewers. Certain restrictions, however, should be placed  
upon the admission of trade wastes to the sewers, and all  
substances which tend to injure or clog them, or to inter-  
fere with the process of purification, should be excluded,  
such as liquids that are strongly acid or contain large  
quantities of grease or of suspended matter. Moreover,  
trade wastes should be discharged continuously and not  
intermittently in large quantities.

## PURCHASING COAL BY HEAT UNITS

Twenty Cities Which Do So—Specifications Covering Such Purchases—Caloric Value, Ash, Sulphur, Moisture—Deductions for Deficiencies

DURING the past two or three years the purchase of coal, or rather the payment for the same, on the basis of the heat units contained therein as shown by analysis has been adopted in general by the various departments and bureaus of the United States Government, and a number of cities or city departments have also adopted the same plan. Information concerning this has recently been collected by the Clearing House of the American Society of Municipal Improvements, and we are presenting herewith an abstract of the replies received to inquiries made of more than 100 cities. So far replies have been received from 95, and 20 of these report one or more departments of the city purchasing coal in this way; these cities being Atlanta, Ga.; Moline, Ill.; New Orleans, La.; Cadillac and Grand Rapids, Mich.; Kansas City, Mo.; Omaha, Neb.; Binghamton, Buffalo, New York and Syracuse, N. Y.; Grand Forks, N. D.; Cincinnati and Cleveland, O.; Philadelphia, Pa.; Jackson, Tenn.; Norfolk, Va.; Milwaukee, Wis.; and Toronto, Ont. In Atlanta, Ga., coal is purchased on the thermal unit basis by the Water Department only, the amount approximating 15,000 tons per year. In New Orleans about 8,000 tons per year is so purchased; in Cadillac, 500 tons; in Grand Rapids, 25,000 tons; in Buffalo, 40,000 tons; in New York, 800,000 tons; in Syracuse, 8,250 tons; in Grand Forks, 1,500 tons; in Cleveland, 30,000 tons; in Philadelphia, 117,000 tons (bituminous); in Jackson, 2,200 tons; in Norfolk, 3,000 tons; in Milwaukee, 17,000 tons; in Toronto, 20,000 tons; in Moline, 6,800 tons; in Binghamton, 2,211 tons, and in Cincinnati, 24,885 tons.

In New Orleans the system employed is only indirectly on the heat unit basis, the test being that of the actual evaporation obtained. In Kansas City the coal for the city is obtained through the purchasing department. During the last few years the city has been using a great deal of oil and this has lessened the importance of the method of purchasing coal. In Philadelphia anthracite coal is not purchased in this way, although bituminous is. Jackson reports that its coal is "not entirely" purchased on this basis. In Norfolk coal is purchased in this way "in some cases."

Inquiry was made as to the saving which is probably effected by this system, to which question the following replies were made:

Cadillac, Mich.—Twenty-five per cent.

Grand Rapids, Mich.—About 10 per cent.

New York City.—Many thousands of dollars.

Syracuse, N. Y.—"I do not look for any saving in the total of money expended for coal by this method. We hope and expect to bring the coal purchased up to the standard of the money paid for it."

Omaha, Neb.—About ten per cent.

Philadelphia.—"There is a saving, but impossible to state amount."

The more important parts of the several specifications are given below:

Atlanta.—A sample of the coal to be furnished will be analyzed by the Water Department and the B. T. U., per cent. of volatile matter, ash, sulphur, etc., will be ascertained; and any coal furnished under the contract which does not come up to the test of the sample on which the contract was awarded may be rejected, or deductions in the price may be made as follows: For each 100 thermal units or fraction thereof less than that shown in the sample, the price is diminished  $1\frac{1}{2}$  cents., and 1 cent for each one-half of 1 per cent. of ash in excess of the sample.

In Moline, Ill., the standard is not less than 1,200 B. T. U.;

not over 10 per cent. ash; not less than 40 per cent. volatile matter; not less than 50 per cent. fixed carbon; not over 5 per cent. sulphur.

In Cadillac the Board of Education fixes the standard of the coal which it will accept as follows: Fixed carbon, over 71 per cent.; volatile hydro-carbons, less than 22 per cent.; moisture, less than 2 per cent.; ash, less than 6 per cent.; sulphur, less than 0.75 per cent. Any coal not coming within 10 per cent. of the above limits may be rejected.

The specifications at Grand Rapids require that heat value per pound of dry coal be stated by the bidder, and if calorimeter tests show the coal to fall below this standard a rebate is made from the contract price, and an increase if the coal comes above the standard, the rebate or increase being made in exact proportion to the B. T. U. For instance, if the bidder guarantees 15,000 B. T. U. per pound and the coal be found to contain only 14,000, the contractor would receive 14-15 of the contract price. Any coal which shows more than 5 per cent. less heat units than the fixed standard may be rejected. Standards are established for different kinds of coal, varying between the limits of 15,000 and 11,000 B. T. U., a minimum of 44 to 71 per cent. fixed carbon, a maximum of 15 per cent. to 6 per cent. ash and a maximum of 3 per cent. to  $\frac{3}{4}$  per cent. sulphur.

In Binghamton, N. Y., it is specified: "No bituminous coal which shows on analysis less than 93 per cent. combustible matter, more than 6 per cent. of ash, or more than one per cent. of sulphur, will be accepted. The bidder must submit an analysis of the coal that is bid, which analysis must show a heating value expressed in terms of B. T. U. per pound of coal. All coal that may in any respect fail to conform to the specifications and analysis submitted with the bid will be rejected."

In New York City the standards for B. T. U. vary from 13,200 per pound of dry coal for broken coal to 12,000 for buckwheat No. 3; and the ash, from 11 per cent. in broken coal to 19 per cent. in buckwheat No. 3. Eight per cent. volatile combustible matter and 1.5 per cent. of volatile sulphur are the maximum amounts allowed. The maximum of moisture is set at 4 per cent. for broken coal up to 6 per cent. for buckwheat No. 3. If the moisture is in excess of the limit, the gross weight of the coal is corrected by an amount directly in proportion to such excess percentage of moisture; that is, if there is 2 per cent. excess of moisture the gross weight of the coal is reduced by 2 per cent. After this deduction has been made, the weight is further reduced at the rate of 1 per cent. for each per cent. of ash in excess of the standard. The gross weight after correction for excess moisture is further reduced at the rate of 1 per cent. for each 100 B. T. U. below the standard; 5 per cent. for each 1 per cent. of volatile sulphur in excess of the standard; 2 per cent. for each 1 per cent. of volatile combustible matter in excess of the standard. Payment for the coal is made on the basis of the gross weight, less deductions made as described.

In Grand Forks the standard is 12,000 B. T. U. and less than 15 per cent. ash. "The price paid for the coal shall be based on the 'net B. T. U. per one cent' received, as found by accurate calorimetric analysis. This 'net B. T. U. per one cent' shall be determined by multiplying 'B. T. U. with moisture' as delivered by 2,000 and dividing this product (B. T. U. per ton) by the price of the coal delivered in cents per ton plus 60 times the percentage of ash. The cost of removal of ash is estimated at 60 cents per ton. The price of the coal as quoted, divided by the ratio of the 'B. T. U. per one cent' guaranteed to the 'B. T. U. per one cent' actually found by test, shall be the price paid. A 2 per cent. variation either way in ash will be allowed without change in price."

In Cincinnati, O., the standard is 13,000 B. T. U. Sam-



ples are to be submitted with bid, and if coal does not come up to sample it may be rejected, or the Board of Water Works Trustees may "make a proper and equitable deduction from the final payments for such coal."

In Cleveland, Ohio, the standard calorific value for all coal is 13,005 B. T. U.'s, and it is provided that the moisture shall not exceed 3 per cent., the ash 13 per cent. or the sulphur 3.5 per cent. The price paid per ton of coal is increased above or reduced below the contract price, accordingly as the heat units are greater or less than the standard; the increase being  $1\frac{1}{2}$  cents per ton for each 100 B. T. U.s up to 13,900 and 2 cents per ton between 13,900 and 15,000 remaining constant at 26 cents for all over 15,000. The reduction in price is at the rate of  $1\frac{1}{2}$  cents per ton down to 12,600; 2 cents per ton from 12,600 to 12,000; 3 cents per ton from 12,000 to 11,000; 4 cents per ton from 11,000 to 10,000, and the constant amount of \$1 where the heat units fall below 10,000.

In Philadelphia the standard is 14,000 B. T. U., with a reduction of  $1\frac{1}{2}$  cents for each 100 units below the standard.

In Norfolk, Va., the standard is 14,500 B. T. U.,  $2\frac{1}{2}$  per cent. moisture,  $7\frac{1}{2}$  per cent. ash, 1 per cent. volatile sulphur and 22 per cent. volatile combustible matter; but a bidder may submit a proposition for coal of a different standard. If the coal delivered shows moisture, ash, sulphur or volatile combustible matter in excess of the requirements, the price is to be fixed by arbitration, contractor and city each appointing one arbitrator and these two selecting a third. The gross tonnage of the coal is reduced at the rate of 1 per cent. for each 100 B. T. U.s below, or increased 1 per cent. for each 100 B. T. U.s above the standard analysis.

The Toronto specifications give 13,000 B. T. U.s as the standard, 10 per cent. of ash, 2 per cent. of moisture and  $1\frac{1}{2}$  per cent. of sulphur. If the coal delivered shows a lower heating value than the standard, the city may reject or accept the same, the amount paid in the latter case being "such a reduced price as shall make the uniform coal equal in heat value to the city to the contract grade, and there shall be deducted from the contractor's price for such coal a proportionate amount; and if the coal shall show a higher heat value than specified the contractor shall receive a proportionate allowance."

Several of the cities embody in their specifications complete instructions for collecting samples and making the analysis.

#### A BOARD OF PUBLIC WELFARE

THE Mayor of Schenectady, N. Y., George R. Lunn, elected last November by the Socialist party, believes that he and the party are looked to for a change in principles of government such as is not expected to follow the accession to power of one of the older parties. In an address to the City Council last month he recommended that as a preliminary act there be created a Board of Public Welfare. This he thought especially appropriate because the change expected is to give human welfare precedence over business in the activities of the government. His idea of the purpose of such a board he explains as follows:

"A board like this, in order to serve the city adequately, should unite in one body for consistent action those city officials who are most directly concerned with what may properly be called the social interests of the city.

"These officials would in my opinion include the Mayor, the President of the Common Council, the Health Officer, the Commissioner of Charities, the Superintendent of Schools, the Commissioner of Public Works and the Secretary to the Mayor. To these officials should be added two

citizens acquainted with the city's problems and with the spirit of modern social reconstruction. No sex qualifications ought to be placed against these appointments, in order that the administration may be free to enlarge the spirit of its work by enlisting the services of women.

"The problem which this board can approach is broadly speaking the social problem itself—the problem of society's neglect of its human resources, the problem of enlarging and enriching the lives of the people. It should become an agent of the city specifically devoted to human welfare."

To carry out the purpose of this board he believes a "social survey" is necessary in order to substitute facts and acts for good intentions only.

"The board might undertake child welfare work, supplementing and co-ordinating the duties of the Health office and the schools; it could take up the pressing work of recreation—of parks, playgrounds, dances, concerts, social centers, festivals, gymnasiums, swimming pools and moving picture shows; it could take steps towards beautifying the city and providing art exhibits; it could supervise skating rinks, tobogganing, municipal ice plants and work-houses; it could take up the provision of free legal aid, the management of the Employment Bureau, and the introduction of greater efficiency into city departments; it might supervise libraries, extend their services and bring them to greater usefulness."

#### INCREASING PUMPING CAPACITY

THE City of New York maintains a pumping station just west of Columbus avenue, between Ninety-seventh and Ninety-eighth streets, known as the Ninety-eighth street pumping station. In 1879 there were installed in this station two Worthington horizontal low-duty compound condensing engines, and in 1890 a Worthington horizontal, high-duty, compound condensing engine, the former having a capacity of 7,500,000 gallons each and the latter a capacity of 10,000,000 gallons. By 1908 it became necessary to practically double this capacity, because not only of the natural increase of population, but also because it was desired to serve additional territory. The 10,000,000-gallon engine was in good condition and it was decided to retain this and to install two 18,000,000-gallon engines in place of the two 7,500,000-gallon ones.

The room in which the pumping apparatus was installed was 81 feet  $2\frac{3}{4}$  inches by 50 feet wide, an additional length of 118 feet by 50 feet wide being occupied by the boiler equipment, office, etc. The two smaller engines occupied a space 39 feet long by 43 feet wide, and as it was desired not to alter the building it was decided to endeavor to secure two 18,000,000-gallon engines which could be installed in the same space occupied by the two old ones. The problem was further complicated by the fact that only one old engine could be replaced at a time, the other being left in operation until the first new engine could take up its work, and also because it was necessary to enlarge the suction and delivery mains within the station under the same conditions. The mechanical difficulty was still further increased by the fact that the station was not equipped with a crane. The Department of Water Supply, Gas and Electricity studied the possibilities of vertical triple expansion crank and flywheel, vertical triple expansion direct acting, steam turbine driven centrifugal, and horizontal triple expansion direct acting types of pumping engines, and after tabulating preliminary data and preparing layout drawings it was decided that the last named would best meet the space requirements. It was also believed that this type would pump water into the city mains at a lower cost per million gallons pumped one foot high than any of the others, consideration being taken of

all pumping station, interest, depreciation and maintenance charges.

A contract for removing the old pumps and substituting two 18,000,000-gallon pumps of the type selected, placing new suction and discharge pipes, a Venturi meter, etc., "the work to be conducted in such a manner as not to interfere with the continuous operation of two of the pumping units in the pumping station," was let to Henry R. Worthington. It was required that the duty of each new engine should not be less than 100,000,000 foot pounds of work performed for each 1,000 pounds of dry steam consumed by the engine and its condensing apparatus. Last year a duty trial of these engines was conducted in accordance with the recommendations of the American Society of Mechanical Engineers, Code of 1890, by a force of engineers from the mechanical division of the department and several representatives from the Henry R. Worthington Hydraulic Works. This test lasted for twenty-four hours, and the report submitted by it contained the following description of the engines:

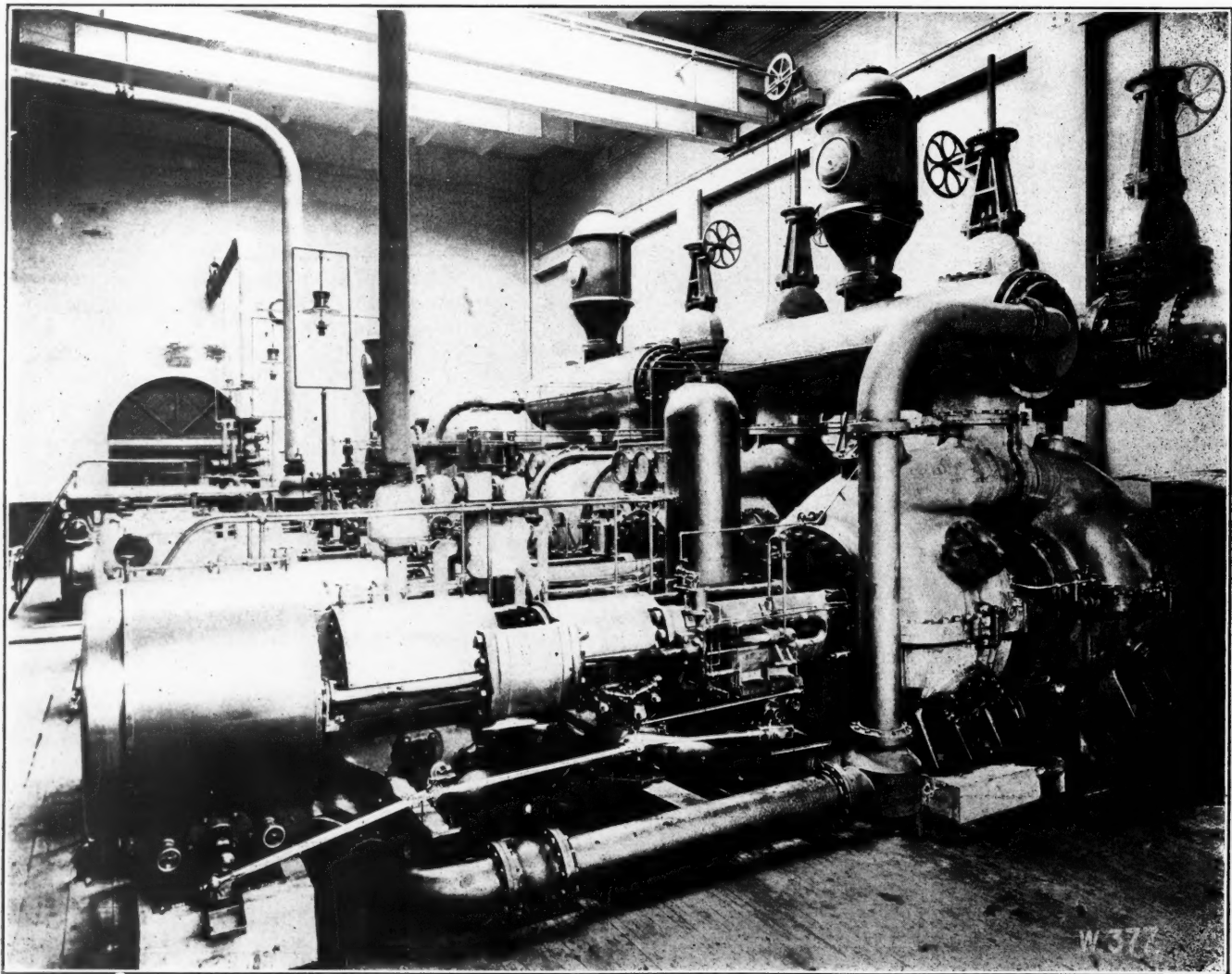
"The equipment consists of two horizontal duplex, direct acting, triple expansion pumping engines, 15 and 23 and 38 by 24 inches, with outside center packed plungers size 24 by 24 inches, designed for a normal capacity of 18,000,000 U. S. gallons per twenty-four hours and to give a duty of 100,000,000 foot pounds per 1,000 pounds of steam with a working steam pressure of 150 pounds per square inch.

"Both engines are identical in size and type and are equipped with every modern convenience consistent with the best steam engine practice. Engines are equipped with

surface condensers, located in the outgoing discharge line, and air pumps worked from valve gear work shafts. Primary feed water heaters are located on the exhaust steam line between the low-pressure cylinders and condenser. The 30-inch discharge line from the new pumps connects north with the standpipe located in the northwest corner of the building, and south through a 36 x 19-inch Venturi meter set in the boiler room, equipped with a recording registering and integrating mechanism which is located in the engine room."

The average number of revolutions per minute was 34.46 for engine No. 1 and 33.67 for engine No. 2. Length of stroke for No. 1, 24.58 inches; for No. 2, 24.45 inches. Steam pressure per square inch at the engine, 153.72 pounds for No. 1, and 153.67 pounds for No. 2. The discharge pressure was 125.84 feet for No. 1 and 125.24 feet for No. 2; and the suction pressure was 26.62 feet for No. 1 and 23.69 feet for No. 2. The distance between gauge centers was 10.3 feet in each one, and the total net head was 109.52 feet and 111.85 feet, respectively. The duty developed was 115,159,950 for No. 1 and 113,884,400 for No. 2, showing an excess above the specifications of 15.16 per cent. for No. 1 and 13.88 per cent. for No. 2. The slip in engine No. 1 was .31 per cent. and in No. 2 .24 per cent.

"The entire work of design, construction, installation and testing was carried out under the direction of I. M. de Varona, chief engineer, and the personal supervision of T. J. Gannon and J. P. Reynolds, mechanical engineers, of the Department of Water Supply, Gas and Electricity of the city."



NEW ENGINES AT NEW YORK PUMPING STATION



### REDUCING GRADES IN PITTSBURGH

THE much-discussed "hump-cutting" project is nearing realization in Pittsburgh, Pa., and according to announcements just made by Director Joseph Armstrong, of the Department of Public Works, bids will be asked for on March 20.

Engineers have completed a final survey and the specific cuts required at various points have just been made public. The district to be included in the grading and widening of streets is bounded on the south by Fourth avenue, on the west by Smithfield street, on the north by Strawberry alley and on the east by Webster, Wylie and upper Sixth avenues and Diamond street.

The depth of the cuts determined upon at the various points varies from a maximum of 16.3 feet at Fifth and Wylie to 6.7 feet at Diamond and Cherry, the average of the cuts at fourteen street intersections being 10.5 feet.

These cuts make radical changes in the grades of downtown streets. In Fifth avenue, the main thoroughfare in the business district, the maximum grade will be 4.87 per cent., instead of 7.55 as at present; in Sixth avenue, 4.54, instead of 6.7. The maximum grade in the district will be 4.96 per cent., instead of 7.64 as at present.

### SOLID AND PNEUMATIC TIRES

THE physical characteristics of solid and pneumatic tires were briefly described as follows by a French scientist before the Society of Civil Engineers of France:

No single pneumatic tire, even of the largest diameter, can be expected to carry a load of more than 1,350 pounds. We have experimented to discover the relation existing between the lasting power of a tire and the weight it supports, and from the results of a great number of tests we have been able to deduce this empiric law, "That the mileage of a tire is inversely proportionate to the cube of the weight it supports."

Thus if the weight is doubled, the wear will be approximately eight times more rapid. If the weight be increased by even so little as 5 per cent. the wear on the tire will be increased about 14 per cent. Thus, as soon as the weight is increased, it is discovered that the tires wear out with extreme rapidity. Accordingly it has been impossible up to the present to make use of this wonderful spring of compressed air. The solid rubber tire has been retained simply to lessen the noise and reduce the violence of the jolting.

Rubber, unfortunately, although elastic to a remarkable degree and extremely pliable, is nevertheless almost incompressible; much more so, indeed, than the greater number of solid bodies—a strange fact, which is but little known.

Consequently, tires made of solid rubber give practically the same result as if hollow and filled with water. With such a tire, a jolt would cause but a very small alteration in its

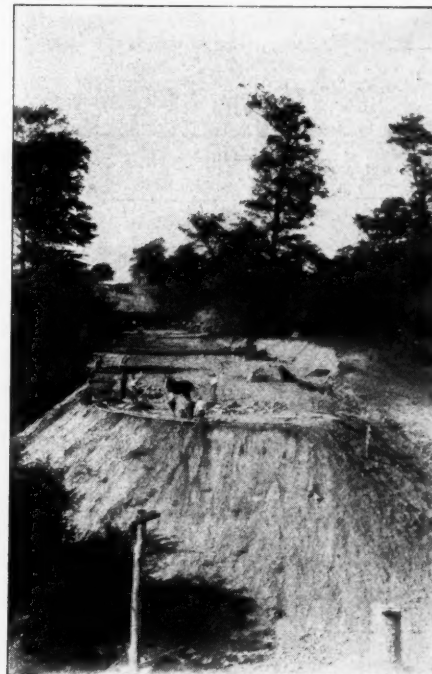
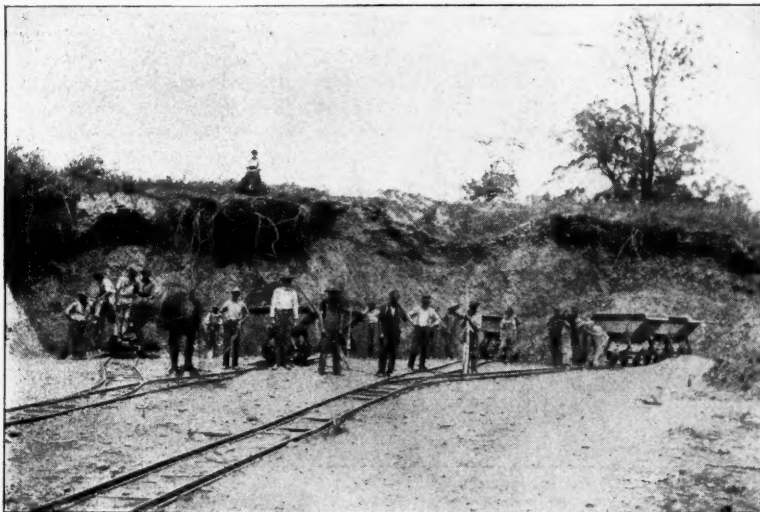
shape, on account of the slight displacement of the molecules of water, which move slowly among themselves.

But in an air-filled tire a similar jolt would cause a great change in shape because of the instantaneous displacement of a complete layer of the compressed air, the molecules in this case being extremely rapid in their movement.

### HEAVY STREET GRADING

NEWCASTLE, a city of 38,000 population, in western Pennsylvania, in constructing streets with practicable grades, has encountered many topographical difficulties in the shape of numerous hollows or valleys with rather steep sides. In some cases it has seemed to be necessary to cross these more or less approximately at right angles, thus requiring either very steep grades or a considerable amount of fill. An illustration of this is the Mercer street extension, the fill in which was 40 feet deep, 50 feet wide on top and about 150 feet wide at the bottom of the hollow. The drainage which was necessarily carried by the run in the bottom of this gully had, of course, to be provided for, and a 5-foot concrete sewer was built before the filling was begun. The fill contained 35,000 cubic yards of earth, which had to be hauled about 3,500 feet. Owing to the large amount of material to be handled and the length of haul the contractors, the Wards and Golden Construction Company, of Newcastle, decided to use cars running on a portable railway rather than carts. The plant used consisted of 3,500 feet of 24-inch gauge portable track, with switches and 15 V-shaped steel dump cars manufactured by Orenstein-Arthur Koppel Company, each car having a capacity of 36 cubic feet. These cars were hauled by horses, which had little work to do except in hauling the empty cars back to the point of excavation, as the greater part of the track was on a 3 per cent. grade, although for a short distance there was a 10 per cent. grade. Down to 3 per cent. grade the cars were held in check with a pole used as a brake, with a heavyweight block on the end; on the 10 per cent. grade a hoist was used to raise and lower the cars.

The cost, including every item of expense, averaged from 24 cents to 30 cents per cubic yard, or about 3-4 of a cent per cubic yard hauled 100 feet. This was considered by the contractor to be a very economical method of handling the work, considering the distance of haul and the steep grades; much more so than the use of carts.



USE OF NARROW GAUGE TRACK AND DUMP CARS FOR MAKING STREET FILL.

## NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

### ROADS AND PAVEMENTS

#### Improved County Pavements Add New Responsibilities

Chattanooga, Tenn.—Because of the fact the county has completed several miles of asphalt streets outside of the corporation limits the county road commission will put into use street sweepers such as are used by the city. Up until the present time the county roads have been entirely of chert and macadam, but the asphalt pavement demands the new machines for cleaning. More than \$200,000 of a bond issue of \$500,000 has been expended in the past six months.

#### Will Leave Fortune to Build Good Roads

Wilmington, Del.—General Coleman du Pont is said to be so well pleased with the plans for the boulevard which he is about to construct as a gift to the State that he has decided to leave practically his entire fortune to be used in building good roads not only in this State but in several adjoining commonwealths. The general has decided to make this disposition of most of his fortune rather than leave it to his children, all of whom will be adequately provided for in advance. Dwelling on the benefits to be derived from the roads, General Du Pont says in his announcement: "I believe good roads will do more good than libraries, hospitals, and, in fact, any of the usual forms of philanthropy."

#### Flowers to Adorn Roads

Mayfield, Cal.—As a result of a movement to beautify the county roads between San Jose and San Francisco, started by the San Jose Chamber of Commerce, Mayfield, in conjunction with Palo Alto, is preparing to plant roses, geraniums and other hardy plants along the county road.

#### Oiled Roads Satisfactory, States Street Commissioner

Lynn, Mass.—Street Commissioner George H. McPhetres, in his annual report, says: "The oiling of streets has apparently been successful this season. Very few complaints have been received and these mostly before the oil has had an opportunity to dry in properly, and quite a few petitions for oiling have been received. The department has discarded the emulsion used in 1910 and has tried a number of different kinds of road oil and finally has settled on the No. 3 and No. 4 road oil of the Standard Oil Co., the road oil of the Texas Company and the special road oil of the Indian Refining Co. as being best adapted to our needs."

#### To Improve Old Panama Road.

Washington, D. C.—What probably is the oldest highway in America still in use, is just about to be modernized and put into first-class condition with a good layer of macadam by the American engineers on the Isthmus of Panama. This is a road built about 1530 over the old Cruces trail, on which pack trains traveled between the old city of Panama and a point on Chagres River where goods were loaded into boats and floated down to the Gulf of Mexico. Originally the trail was paved with field rock, but it was abandoned about the middle of the eighteenth century when the treasure and merchandise fleets ceased to call at Porto Bello. Again it was used by the adventurous spirits among the "forty-niners" as part of the Panama route to California.

#### Fine System of Concrete Highways Radiate from Detroit

Detroit, Mich.—Development of a system of concrete highways under the Wayne county highway commission is attracting attention of road builders and civil engineers all over the country and Canada. Twenty-seven miles of concrete road and eight miles of gravel road will be built this year, under a \$500,000 issue of the \$2,000,000 bonds authorized by the board of supervisors and ratified by popular vote, and when these are completed it will be possible to go from the city hall to the county line in nine different directions over improved highways. Of these four are now completed, the Jefferson avenue, Mack avenue, Gratiot avenue and Woodford avenue roads. Work will be done as follows: Grand River avenue, 10 miles now built, will be extended five miles. Michigan avenue, 18 miles, now improved, will be extended 12 miles; River road, 18 miles, now improved, will be extended six miles. Mt. Elliott will be extended two miles; Van Dyke will be extended two miles, all with concrete. Plymouth road will be extended eight miles with gravel. When the highway commission commenced its work tarred macadam was in great favor, and short stretches were built with this material, but recently concrete has been extensively used. The first concrete highway was laid on Woodward avenue and is now entering its fourth year. Slight cracks have developed, due to the experiment of laying the pavement in two courses of different proportions of concrete, resulting in different expansion. Even with this the road is declared one of the best in the country. Roadways now are laid with a single course of a minimum thickness of seven inches, and they stand all conditions. They are expected to last from 25 to 50 years.



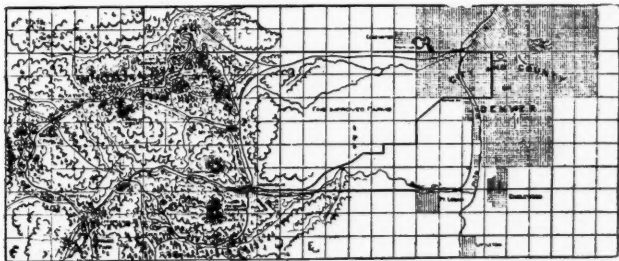
Courtesy of Dallas Morning News.

This viaduct, connecting the business section of Dallas, Tex., with its suburb, Oak Cliff, was opened February 22. It is said to be the longest reinforced concrete viaduct in the world, 4,790 feet. An annual feature of the ceremony was the releasing of homing pigeons, in accordance with a Japanese custom.



### Denver and Hills Linked by Chain of Parks

Denver, Colo.—A chain of picturesque mountain parks, extending in a semi-circle from Golden, over Lookout Mountain, by way of Alta Vista Park, Bergen Park, Evergreen and back to Morrison, all connected with Denver



by electric railways and automobile highways as nearly perfect as they can be built, is the plan of the mountain parks committees of the various commercial bodies, as outlined to the Real Estate Exchange by Kingsley A. Pence, chairman of the joint committees. The system will make the most elaborate and beautiful chain of mountain parks ever established by any city. There will be not less than a dozen parks, all connected by automobile roads, and most of them reached by electric railways, according to the present plans of the committee. Bergen Park, the point in the system most distant from Denver, is about eighteen miles from the city limits.

### Use Dynamite for Highways

St. John, Kan.—Samuel Newell, trustee of Fairview township, has solved the problem of mud holes in county roads. He blows them out with dynamite, quickly and cheaply. In one of the roads in his township was a mud hole a quarter of a mile long, practically impassable even for light buggies. Motor cars couldn't get through it at all. Mr. Newell read about deep plowing with dynamite and how the giant powder had been used in drainage work, so he decided to try it. He drilled holes every hundred feet through that stretch of mud and put a blast of one stick of dynamite in each hole and blew up the whole roadway. These explosives broke up the hardpan under the road and permitted the water to drain into the subsoil. Newell then put his road graders at work and graded the road so it could be used. Within a few hours after the heaviest rain the water disappears and the melting snow soaks into the ground so that the road is dry as soon as the snow is gone. The stretch of road is now passable by any sort of vehicle and carrying the heaviest loads. Farmers who formerly had to drive two miles out of their way to haul wheat to market can haul the usual load over this road at any time. The road was through a low, swampy place and now it remains dry and hard while water covers the surrounding land. Other bad mud holes in Stafford county are to be blown up this spring.

### Ohio Likely to Have \$50,000,000 for Roads

Columbus, O.—The good roads proposal, which provided for the issuance of \$50,000,000 under a State aid plan for the construction of inter-county wagon roads, has passed the constitutional convention by a vote of 72 to 40. The vote was the culmination of nearly two-weeks' debate. Although no provision was made in the proposal, it was the understanding between advocates of the proposition and a large number of those originally opposing it that separate submission would be made of the proposition to the electors.

### Highway Commission Lowers Cost of Roads

Los Angeles, Cal.—Attesting to the success of the economical administration of the present Highway Commission, bids of several county contractors on the construction of the Vernon-Downey road, which are under consideration by the Supervisors, range from approximately \$4,000 to \$6,000 a mile. This is about half the average cost per mile set forth in former offers. The Vernon-Downey highway is seven miles in length, and while the grading work to be accomplished will not be difficult, the lowest bid of \$27,400 is an unheard-of figure, yet the contractor considered a substantial profit in deciding on this amount.

## SEWERAGE AND SANITATION

### Elizabeth City Water Polluted

Elizabeth City, N. C.—Dr. I. Fearing, the city health officer, is in receipt of the report of the analysis of city water made by the State chemist. This report shows that the water is a danger to the health of the consumers. Dr. Fearing has issued the following danger notice in regard to the water: "To the water takers of the public supply of Elizabeth City: The analysis of the water sent this month to the State chemist, Dr. C. A. Shore, shows pollution with the colon bacilli. These bacilli are found in the intestines of man and animals. Its presence shows that our city water supply is polluted by sewerage or the dejecta of the lower animals. Until further notice, I would advise all users of the city water to have boiled all water used for internal purposes. Respectfully, I. Fearing, M. D., City Health Officer." The matter will be taken up with the officers of the water company at once to devise some way to secure pure water. Also the Aldermen will take some action to secure an improvement in the water that is being supplied to the city.

### Typhoid Alarms Wilmington

Wilmington, Del.—Since February 12, when the first of the recent cases of the fever developed, twenty-one cases of typhoid have been reported in this city, but no deaths have resulted. Because of the almost daily increase the health authorities have become alarmed and are taking measures to check the epidemic. It has been decided to secure typhoid serum from a Philadelphia concern and to urge all residents to undergo inoculation. The Health Board will furnish a disinfectant which all garbage collectors will have to sprinkle on cans at houses where there are cases of the disease. In all city offices spring water is being used and the Board of Education is preparing to have spring water supplied to the public schools. All of the big manufacturing concerns have shut off the city water and are supplying spring water for employees.

### Screening Ordinance to Be Strictly Enforced

Montgomery, Ala.—Every man arrested on the charge of violating the city's screening ordinance will be forced to pay or go to jail. It was stated at the City Hall that no fines imposed by the Recorder will be remitted. About the 1st of March Commissioner Walter R. Brassell and Chief Clerk Marshall R. King of the Sanitary and Health Department, will begin a crusade against open fruit stands, grocery stores and other places likely to be effected by flies.

### Engineering Students Carry Out Contract

Auburn, Ala.—Auburn's sewerage system is nearing completion. The contractors, Bonner and Henderson, two Auburn men, who are doing post-graduate work in engineering this year, expect to put the finishing touches to the task within the next few weeks. These men secured the sewerage contract in competition with many others, and are demonstrating the practical quality of the engineering course at Auburn by applying that course to the practical problems presented in Auburn—and the engineering problems presented are not altogether easy ones.

### Reading's Filters Declared to Be Inadequate

Reading, Pa.—Mayor Stratton was surprised to receive this letter from State Health Commissioner Dixon, declaring the city's sewage filters of Reading are overtaxed and that another unit is needed: "The sewage filters of your city are overtaxed and do not purify the sewage to as high a degree as they should. Another unit is needed and the effluent should be treated with a germicide. The latter plant can be installed within a month's time and the expense would not be over one or two thousand dollars, and it would accomplish a sterilization of the effluent. I would suggest that you have this matter looked up and further communicate with you." The Mayor was surprised because for years Reading has been doing its share to purify its sewage. The present plant was built under the direction of the State Board of Health and was repeatedly pronounced satisfactory. Reading is far in advance of other cities in this respect and has spent millions of dollars for its disposal plant, pumping station and sewers.

### To Keep Steam from Sewers

Toledo, O.—Complaints to the effect that steam from factories has been turned into certain sewers have been received by Service Director Cowell. This practice, Mr. Cowell says, wears out the sewers. His investigation disclosed that the temperature in sewers receiving steam is 200 degrees. "I'm not going to warn manufacturers any longer. Arrests will be made from now on," said Cowell.

### Shut Off Water Supply in Schools

Michigan City, Mich.—The water supply situation has reached such a stage in the city that the Board of Public Health has ordered the water supply shut off in the schools. The Board states that cases of typhoid and winter cholera are on the increase and that Michigan City never faced conditions as they are to-day. The Board again warns everybody to boil the water supply for at least thirty minutes, whether secured from well or lake, aerate it by pouring from one vessel to another, put it in clean bottles with clean corks, and give to each child for use at school.

### Want to Pump Up Lake Water

Chicago, Ill.—The sanitary district of Chicago will appeal to the Secretary of War in Washington February 28 for permission to pump 10,000 cubic feet of water a second from Lake Michigan for the purpose of diluting sewage in the district. It was announced that officials of the sanitary district, the Mayor of Chicago, the city Commissioner of Public Works and Illinois Congressmen would present the appeal to the Secretary of War. The drainage canal now draws 4,167 cubic feet a second from the lake and the increase is considered necessary. Should the Federal officials deny the appeal an expense from \$40,000,000 to \$50,000,000 will be necessary for a new system.

### Sewer Gas Explosion Shakes City of Camden

Camden, N. J.—People were panic-stricken in their homes when exploding sewer gas shattered window panes on Market street, between Tenth and Eleventh streets. The lids of manholes were blown up as high as house-tops, and a trolley car of the Camden and Trenton Railway had a narrow escape from being blown up. The car, well filled with men and women, had just passed Tenth street when one of the heavy iron plates was forced from a manhole and whizzed by the rear of the car, and it had just passed Eleventh street when another manhole blew out almost in front of the motorman. After the first explosion women ran out of their homes in fright. They had hardly reached their front doors when the second explosion occurred.

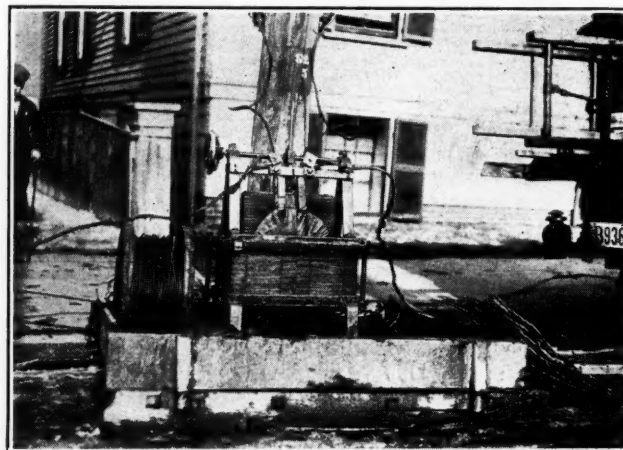
## WATER SUPPLY

### Bursting Dam Endangers Town

Hamburg, Ia.—The bursting of one of the walls of the city reservoir here allowed the escape of more than three-fourths of the entire city water supply and flooded several residence streets, running in a raging torrent toward the river, in some places the depth of the flow being from a foot and a half to two feet. The reservoir is built of concrete on the crest of the bluff just above the business section of the town and is about 350 feet above the level of the business streets. The break came entirely without warning. Little or no damage is reported from water in basements and cellars of the business houses. The concrete walls of the reservoir were about eight inches in thickness, and at no time previous to the break had any crack been noticed, although the reservoir has been constructed several years. A large section of dirt was washed away from the crest of the hill where the break occurred and much of this yellow loam was carried with the water and deposited on the lawns wherever the torrent raged. This break will require a week or more to repair, during which time the city will be equipped poorly for fire protection. Water for pressing needs is being furnished on direct pressure from the pumps and what little can be stored in the bottom of the reservoir.

### Water Carts Supply Lynn Citizens With Water

Lynn, Mass.—Between 600 and 800 water services to dwellings and factories in various sections of the city have been put out of commission by the frost, which, upon the arrival of the springlike weather which has been prevailing during the past few days, has sunk deeper into the ground and caused many mains to freeze solid. It has been realized by the Water Department officials that desperate measures must be resorted to if the situation



Courtesy Lynn Item.

ELECTRIC THAWING DEVICE.

is not to become positively alarming, and having this thought in mind, Water Commissioner Campbell has authorized the employment of several emergency gangs of workmen to attend the complaints, which have been so numerous as to almost drive the clerical force in the department office at City Hall distracted. About thirty men have been engaged to deliver water from house to house in big galvanized iron pails, which have been purchased especially for this work. Acting upon the suggestion of water department officials elsewhere, Mr. Campbell has secured from the Department of Streets and Highways the temporary use of one of the sprinkling carts, which is being used in the door-to-door deliveries of water. Nearly fifty extra men are being employed in thawing out the pipes. For the first time this winter it has been necessary to call upon the Lynn Gas & Electric Co. for the use of its electrical apparatus for the thawing out of the pipes. This corporation has three of these machines, but it has been having troubles of its own in Nahant and Swampscott, and could spare only one to the city. From the pipe taken out of Ontario street when the break occurred, it is reported that the workmen removed a solidly frozen circle of ice. They declare that it would have been impossible to push a wire as thin as a needle through the frozen pipe. No effort is being made to conceal the fact that the situation in East Lynn is very ominous indeed. The hydrants have all received proper attention, but although they are in working order, no water issues from them because the mains, which are laid from six to a dozen or more feet in the earth, are frozen. It is figured that the freezing of the pipes will cost the Water Department at least several thousand dollars. Besides using electricity for thawing the ice in pipes the Water Department has a Burbank steam thawing device which gives excellent results.

### Thaw Out Pipes With Electricity

Highland Falls, N. Y.—The electric power house had to work night and day and electricity was used in thawing out sections of the water main during the severe weather of last week. The superintendent of the lighting plant had a very hard time of it. He consumed a cord of wood, had laborers digging for several days, and all this proving ineffectual, he had resort to the electric devices. After much hard work the pipe was thawed, only to find there was no water in it. Up at Shadelawn Farm the water pipes were frozen for the first time in forty years and they are five feet under ground.



**Water Famine in City of Hornell**

Hornell, N. Y.—The water famine here still continues, with no chance of relief until it rains. The city reservoir is empty and the pipes contain a solution of mud and water which is unfit for use. Many fish have been taken from the pipes and an epidemic of sickness is feared. Should fire break out the department would be practically powerless.

**Salem Water Problem Is Solved**

Salem, Mass.—Engineer Johnson, employed by the Salem Water Board, has evolved a plan which it is thought will settle the matter of an additional water supply for Salem and Beverly satisfactorily for at least thirty years to come. The matter has been put before the water boards of the two cities in conference. The plan is to construct a storage basin with a capacity of a billion and a half gallons of water at the head of Nichold Brook in Putnamville, Danvers, and fill it in the spring floods from Ipswich River, the pumping station being located near the turnpike in Topsfield with a 36-inch pipe to Wenham Lake, the water thus stored to be run as needed into Wenham Lake by gravity. The location for the reservoir is a natural basin and two small dams will complete it, and there is a site for another reservoir adjacent if further storage should be needed. It is estimated that the entire cost would be \$776,000, which would include operating expenses of \$54,000 a year for thirty years, as against \$91,000, which would be the cheapest plan of entering the Metropolitan supply if other adjacent cities and towns joined in entering that supply, or \$139,000 if Salem entered it alone.

**Holliswood Without Water**

Brooklyn, N. Y.—Residents of Holliswood, which is the section of Hollis lying on the ridge just north of Hollis Gardens, and to the east of the Jamaica Estates, have been without water for the past ten days, except that contained in the mud in the streets. The waterpipes of the district were laid about twenty years ago, when the section was developed by Frederick W. Dunton. The Jamaica Water Supply Co. took over the system about two years ago, but has done nothing to improve it, and the little two-inch pipes originally laid are much too small for present conditions. During the recent cold weather they have frozen up and burst repeatedly. The electric method of thawing out has been tried and usually it has burst the pipe and left things worse than before.

**Annual Report Nashville Water Works**

Nashville, Tenn.—According to the annual report of Captain George Reyer, superintendent of the city Water Works Department, 1911 was a fine year for the department. During the year there were ten miles of main extensions and a largely increased number of connections and meter users. Through increased economy and better equipment the work of the department was greatly benefited. From a chemical and bacteriological standpoint the water was in excellent condition. Dr. W. H. Hollinshead of Vanderbilt University made monthly chemical tests, and Dr. William Litterer of Vanderbilt University made bacteriological tests twice each month. The cost of clarifying and purifying the water was \$14,085.87, including the cost of cleaning the reservoir. In all 4,399,045,616 gallons were pumped during the year at a cost of about \$3.20 per million gallons. The average daily pumpage was 12,052,179 gallons, a recorded decrease of more than 1,000,000 gallons per day. This does not mean that Nashville is using less water, but that the engines are in more efficient condition and that the loss by slippage was less. The extension of water mains during the year amounted to 54,048 feet, consisting of 1,241 feet of 18-inch main, 9,316 feet of 12-inch and 43,491 feet of 6-inch. The lines are equipped with ninety-seven fire hydrants and twenty-two valves. The total expense of the work will, on completion, be \$57,080.83. The pumping station equipment consists of one Allis-Chalmers pump, capacity 20,000,000 gallons per day; one Holly-Gaskill pump, 10,000,000 gallons per day; two Worthington pumps, 10,000,000 gallons per day each; two boilers of 400-horsepower each, three years old, and two new boilers of like capacity. The steam pressure carried is 160 pounds.

**STREET LIGHTING AND POWER****Order Ornamental Posts**

South Bend, Ind.—Struck with the beauty and efficiency of South Bend's boulevard lighting system, officials of Saskatoon, Canada, have ordered 420 similar posts of the George Cutter Co. of South Bend, the manufacturers of the electroliers. After a careful investigation a committee of Saskatoon business men selected the South Bend design, and are paying the heavy freight charges and 30 per cent. duty on the entire consignment in order that the success of South Bend's plan may be duplicated. Marion, Ind., has ordered 136 posts of the same company.

**Electrical Work on Keokuk Power Plant Begun**

Keokuk, Ia.—With the beginning of work on the electrical part of the water power installation, a new grand division of the construction has commenced. Machinery is now being put in to build the superstructure of the big power house, which is the part above the solid concrete basement, the four walls and roof sheltering the immense amount of electrical machinery to be installed there. This electrical part of the plant is to be built by the Stone & Webster Engineering Corporation and their electrical engineers. They begin at the turbine shaft, where Chief Engineer Cooper leaves off after building the dam, its appurtenances, the high substructure of the power house containing the hydraulic machinery, turbines, draft tubes and other things; and from the electric generator on each turbine spindle they construct or erect all the electrical installation, which is the largest ever put in one place. There are the mammoth generators of 7,500 thousands of watts capacity each. There is attached to each electrical unit the miraculously sensitive governor, which cost over \$2,000,000 to invent and perfect, and which balances the production to the load so accurately that the stopping of a street car in St. Louis will change instantly the rate of the turbine at Keokuk.

**London's Streets Lighter**

London, England.—As a result of the experimental lighting of certain of London's streets with centrally hung electric and gas lamps it has been decided to adopt this system throughout the city, and contracts for ten years have been divided between the electric light and gas companies. When the new form of lighting is in complete operation it is estimated that the city's night lights will be equivalent to 1,210,160-candle power, nearly double the present illumination, notwithstanding which the cost will be reduced by one-third. Holborn also has been improving its street lighting, and altogether the competition between gas and electrical engineers promises soon to make London's night almost as bright as its day.

**City and Railroad Plants Co-operate**

Hagerstown, Md.—The members of the Board of Street Commissioners and officials of the Hagerstown Railway Co. held a conference and the commissioners agreed to furnish the Hagerstown Railroad power until the new power house to be erected at Security is constructed. Under the agreement between the Board of Street Commissioners and Hagerstown Railroad the latter company agreed to furnish power to the city in case of a breakdown in the plant, after the big Security plant is constructed.

**Power Plant Flooded—Three Towns in Darkness**

Hagerstown, Md.—The high water in the Potomac River and its tributaries caused by the rains and melting snow is abating and no serious damage has been done. Lowlands along the streams were inundated and fields of wheat, but the injury is not great. The mass of ice on the Potomac River is wearing away gradually, owing to the action of the muddy water. Rivermen believe the ice will break up and pass off without doing any serious damage. The river has been frozen over for two months, which has not been known before in many years. The plant of the Antietam Light and Power Co., near Keedysville, was put out of commission by high water in Antietam Creek, and Boonsboro, Keedysville and Sharpsburg were in darkness. Patrons of the plant had to substitute tallow candles and coal oil lamps for electric lights.

### Municipal Plant Is Nearly Ready

Tower, Minn.—The municipal power plant is so nearly ready for operation that Engineer Meeker has been ordered to take up the work at the dam.

### Electrical Report

Richmond, Va.—The annual report of the electrical department of the city, showing the work of City Electrician Thompson and of Electrical Inspectors Speights and Bowry during the past year, has been submitted to Mayor Richardson. It is earnestly recommended that ordinances be adopted requiring all wiring in basements and cellars to be enclosed in steel or iron conduits for fire protection; that all wires in hospitals, hotels, schools, churches, public halls and apartment houses be enclosed in conduits, and that all wiring in what is known as the fire limits be on the conduit system.

### New Meter Reading Plan

Woonsocket, R. I.—The improved methods of reading meters and sending bills adopted last month by the Woonsocket Electric Machine & Power Co. seems to meet with general favor from the public and has been of invaluable aid in systematizing the work of the company's clerical force. Instead of being bothered twice a month by separate electrical and gas computers, but one visit is made monthly to each patron. The value to the customer is the elimination of one visit while the company is enabled to get a more experienced reader, as he does the work formerly performed by two men. This helps both the company and the consumer. Instead of reading the 6,000 or 7,000 meters in the past ten days of the month, bills are sent to the patron when ready and, although they are not sent at the first of the month, there will be thirty days between each bill, which will have the same effect after the system is in operation a short time. Instead of the big congestion in the offices of the company the last ten days the work is equally divided among the thirty days of the month.

## FIRE AND POLICE

### May Merge Fire and Police Departments

San Francisco, Cal.—A union of the Police and Fire Departments of San Francisco, together with the members, other than technicians, of the other departments to be used jointly in case of emergency, has been planned at a conference of the heads of the Police and Fire Departments with E. A. Walcott of the Civil Service Commission. That is the object toward which a series of steps must be taken, first of which will be the elimination from the Police and Fire Departments of the physically unfit.

### Underwriters' Report Praises Efficiency of Department

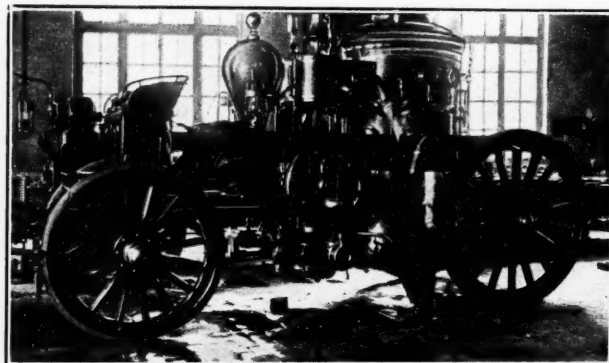
Bridgeport, Conn.—A fine tribute to the efficiency of the Bridgeport Fire Department under the direction of Fire Chief Edward Mooney is the report of the National Board of Fire Underwriters for 1911, which gives the total loss by fire in this city as but \$56,404.16, which is but 50 cents per capital on the population of 102,054. This is a remarkable record and probably lower than any city of the same size in the country, showing that possession of motor-drawn fire apparatus which arrive at fires before they get a good start is the only way of conducting a department. It also shows that the local fire fighters are second to none in the country and Bridgeport can well afford to feel proud of its department. During the year 421 alarms were responded to, of which 13 were false alarms. The promptness and efficiency of the local department is readily seen when it is shown that 289 fires were confined to the floors on which they originated, or nearly 75 per cent. The total amount of property involved in the fires was \$3,441,024.26, and the total loss of but \$56,040.16 is but a bagatelle beside the amount involved. Of this amount, but \$53,923.01 was loss from fire while \$2,481.15 was loss from exposure of contents resulting from the fires. Taken in its entirety, the report is a most satisfactory one and reflects the greatest credit on the entire Fire Department, from the Commissioners and chief down to the newest member.

### Fire Loss Is Light

North Tonawanda, N. Y.—The fire loss in North Tonawanda last year was exceptionally light. According to Fire Chief Frank Kage's report the total loss did not exceed \$30,000. There were 53 fires and 6 false alarms. Eighteen were extinguished by use of the chemical machines and 26 were put out by the water streams. During the year the firemen laid 34,900 feet of hose. Since January 1 the city has been fortunate in that the loss by fire in nearly two months has not exceeded \$150.

### Steam-Propelled Engine Converted Into Horse-Drawn

Newark, N. J.—The so-called steam-propeller which the Fire Department purchased several years ago has been converted into a horse-drawn apparatus. Although it is a very fine piece of apparatus, having the remarkable pumping



AMOSKEAG STEAM PROPELLER, NOW HORSE-DRAWN.

capacity of 1,300 gallons per minute, it has been a source of much trouble. The trouble has been that sparks emitted from the stack when it was traveling through the streets to a fire have been the cause of other fires. On one occasion it started three fires in response to one alarm. From a rather exaggerated sense of humor on the part of some citizens the machine had been nicknamed Mount Pelee. However, troubles of that sort are now over and the department has a more powerful engine than is possessed by most cities. The accompanying reproduction is from a photograph taken in the repair shops, where the work had just been completed. Although it is a very heavy machine, two men had no difficulty in moving it about on the floor into a suitable position for the photograph. The engine is an Amoskeag made by the American Locomotive Works.

### Police and Fire Departments to Aid Each Other.

Spokane, Wash.—Adoption by the Department of Public Safety of a plan by which the police and fire divisions of the city will act as reserves of each other in cases of emergency is being considered by Commissioner Hayden. The project includes the regular instruction of policemen in the art of handling fire apparatus and being useful at fires and of the firemen in keeping a crowd from becoming a mob and other police duties. In a big fire the fire chief could call on the police chief for a detachment of men for reinforcements and the police chief could procure from the fire chief a posse of trained policemen in cases of emergency.

### Gymnasium Outfit for Fire Station

Butler, Pa.—Manager John H. Allman of the Standard Steel Car Co. has presented to the Central Fire Station a fine gymnasium outfit which will be made a part of the equipment at the station. In the outfit are two punching bags, a medicine ball, rowing machine, pulling machines, etc., the different articles being of the best quality to be had and making up the finest kind of equipment for a gymnasium which will be at once fitted up in the Central Station for an aid in keeping the firemen always in the best of condition and better than ever fitted for the most strenuous work which may fall to them in the work of the department. Members of the Central company are more than pleased with the present of the outfit, not only because of the enjoyment and training which they will be able to receive from it, but also because of the appreciation of their efforts which is indicated by this present from the manager of the largest and most important manufacturing establishment in the Butler district.



## AUTO APPARATUS NOTES

**Columbus to Purchase Ten Pieces of Apparatus, Mostly Tractors—Underwriters Approve Model Chief's Car at Battle Creek—North Yakima Sells Its Last Fire Horse—Autos Inspected by Officials of Neighboring Cities**

Morristown, N. J.—The Resolute Hook and Ladder Company have planned an exhibition and reception in honor of the newly purchased automobile truck constructed by Mack Bros. of Allentown, Pa. In the afternoon a test will be given of the new apparatus, a reception will follow at the truck company's fire house, and in the evening an entertainment and collation will be held at Washington Hall.

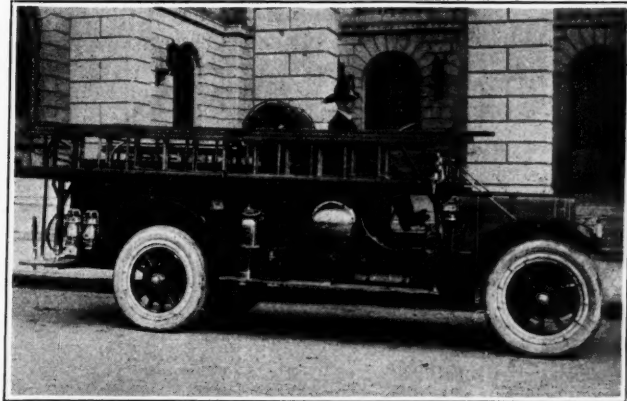
Columbus, O.—The City Council has provided for a bond issue of \$50,000 to buy motor-driven fire apparatus. This amount, it is estimated, will purchase motor-driven equipment for at least ten pieces of fire-fighting machinery, and this means the replacement of at least twenty horses. The equipment of the department with motor-driven equipment is expected to continue until horses are entirely eliminated as a feature of the department. In gradually equipping the department with motor-driven apparatus, Chief Lauer does not expect to sacrifice any of the present equipment. The greater part of the appropriation will be used in purchasing tractors to which the present equipment will be attached. It is expected that one or two hose wagons with chemical attachments will also be purchased. In case the tractors outlive the balance of the equipment they can, with small cost, be converted into motor-driven hose and chemical wagons. In this manner all of the old equipment is to be utilized and there will be no purchases of actual fire-fighting apparatus except the equipment for the new Hilltop house. This equipment will be motor-driven and it is expected that all new apparatus purchased in the future will be thus equipped.

Cincinnati, O.—The Cincinnati Salvage Corps have recently put in service an automobile fire patrol wagon, which was built by the Winton Automobile Co. of Cleveland, O. The car will carry six or eight men and has compartments for the waterproof blankets which they put over the goods that are liable to injury from a fire.

New Bedford, Mass.—The members of the Fire Department Committee, together with other city officials, made a visit to Springfield one day last week and inspected the new fire station. Aldermen Glennon and Sherman, Councilman Hughes, Chief Dahill, Superintendent Gibbs, City Messenger Barney and Clerk Sawyer of the committee made up the excursion party. Chief Daggett was the guide for the party at the fire station, which is of brick and artificial stone, four stories in height. The interior construction is steel and concrete. The building is 84 x 82 feet, and cost \$102,000. It has five doors, and on the first floor is stationed five pieces of automobile apparatus, mostly of the Knox type, and while the New Bedford party admired the building, some of them felt that more modern apparatus could be supplied if New Bedford is fortunate enough to get a new building started. The second floor of the building is occupied by administrative offices with a few sleeping rooms. There are also sleeping rooms on the third and fourth floors, with bath and toilet rooms on each floor, and shower as well as tub baths. The fire alarm signal system is located on the

top floor, this being of the latest Gamewell type, and cost \$30,000 to install. It is built to receive and record twenty alarms of fire at one time, and is of a quick and slow recording arrangement, the number of the box being quickly transmitted to the engine houses and slowly announced on the outside bells, so that the apparatus is on its way before the public knows what box has been pulled. There are 200 boxes in the city and 26 circuits. The system is both automatic and manual, so that in case of failure of the automatic signals to work, an alarm can be transmitted by hand.

Medford, Ore.—Medford is the first city in the State outside of Portland to purchase a motor chemical and hose wagon for its Fire Department. The apparatus, made by the Pope-Hartford Co., is mounted on a 1912 wagon chassis. The wheels have 40 x 6 tires, the largest pneumatic tires that have ever been used in the Northwest.



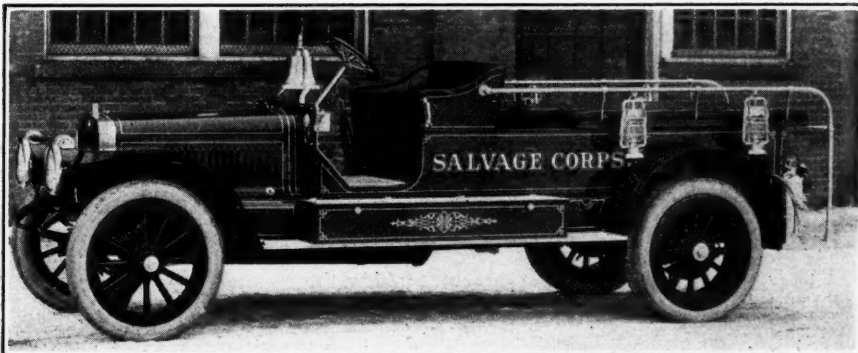
Courtesy The Evening Telegram, Portland, Ore.  
MEDFORD'S MOTOR CHEMICAL AND HOSE WAGON.

The casings on the Portland police patrol are one size smaller, 39 x 5. A maximum speed of 45 miles an hour can be made. The motor develops 50 horsepower. Some of the equipment on the wagon consists of a 50-gallon chemical tank, two hand extinguishers, 16 feet of ladder, 1,000 feet of 2½-inch hose and 250 feet of one-inch hose. The full weight of the motor car is 5,000 pounds. All the latest accessories are on the machine. An automatic head lamp lighter is also attached. Some of the other Coast cities that have Pope-Hartford autos in their Fire Department are San Jose, Berkeley and San Francisco. Twenty-three cities in the United States have this make of automobile in use.

Jersey City, N. J.—Many Greenville people visited the quarters of Engine Company No. 8, on Ege avenue, to look at the new combination chemical engine and hose wagon which has been installed in that house. The engine is the latest thing in fire fighting equipment. Acting Captain Joseph Hogan of Company No. 8 escorted the citizens through the house, which has been overhauled. The new chemical engine has been purchased with the money saved by the Fire Department last year.

Macon, Ga.—The Fire Department, L. M. Jones chief, has just placed an order for two auto pumping engines and a service truck with the American La France Co. When these arrive the department will have four pumps, two combination chemical and hose wagons, two hook and ladder trucks and one chief's car, all autos.

Salt Lake City, Utah.—A combination automobile chemical and hose wagon for use in the business district of the city and a combination automobile and chemical for the use of the chief are pieces of new apparatus authorized by the City Commission to be purchased for the Fire Department. The apparatus will cost about \$11,000. The auto chemical will replace two pieces of horse machinery, do away with four teams and harness and save the wear and tear on one piece of apparatus.



WINTON AUTOMOBILE FOR CINCINNATI SALVAGE CORPS.

Pueblo, Col.—For the purpose of inspecting the auto fire apparatus now in service at the North Main street station and examining the specifications for the new 100-horsepower car which is now under course of construction in the Victor fire engine plant at Buffalo, N. Y., a party of the highest officials of the Salida city government arrived in Pueblo, headed by Mayor W. S. Buchanan. The other members of the inspection board were William Dargaven, M. Lessing, V. C. Davenport, members of the Salida City Council, and F. C. Paine, an expert mechanical engineer, who accompanied them for the purpose of preparing a report on the car which now is in service. Mayor Buchanan is an old-time friend of T. D. Donnelly, Commissioner of Public Safety. They were associated in various ways in Victor and later in Salida. The crowd was met at the train by Mr. Donnelly and taken to the City Hall, where they were guests of the Department of Public Safety. They made a careful inspection of the police and fire departments, and were afforded a demonstration of the big auto truck by Chief Christy of the Fire Department. They expect to motorize the Salida fire and police departments immediately and were very much pleased with the progress that Pueblo has made along that line.

North Yakima, Wash.—Mayor A. J. Splawn, Commissioner of Public Safety, acting chief of police and former police magistrate, will add another to his many duties when he mounts the auctioneer's stand to auction off the remaining four fire horses owned by the city. The horses have been displaced by automobile fire apparatus which the department has recently installed.

Montclair, N. J.—The Montclair Fire Department is to be equipped with two automobiles. One of the machines will be a combination chemical and hose cart and will also carry a water pump to be used when the water pressure from the hydrants is not sufficient. This machine will be of ninety horsepower. The other piece of apparatus will be a hook and ladder truck. On motion of Councilman McGlynn, chairman of the Fire Committee, the Montclair Council appropriated \$13,500 for the purchase of the machines. It is proposed to place the automobiles at Fire Headquarters, Valley road and Bloomfield avenue. The apparatus and six horses now at headquarters will be shifted to other houses. A special committee of Council has been appointed to secure plans for an addition to the police station and Fire Headquarters with a view to using the added space for town offices. By using motor-drawn fire apparatus the space now occupied by the horses can be utilized for other purposes.

Lowell, Mass.—The expense of maintaining the automobile police patrol was discussed at length at the last meeting of the municipal council, and although the statement was made that it cost \$4,000 to maintain the self-propelled vehicle, that also included the pay of the three men who work on eight-hour shifts. The real expense of upkeep and maintenance was \$807.97 for the year 1911. When the horse-drawn apparatus was used by the police department it was necessary to hire three men, and in the event of the horses not being used to respond to calls for the patrol they had to be fed. In the case of the automobile, when it is not in use there is no expense so far as the machine is concerned. On various occasions the police and fire patrols have demonstrated the feasibility of the self-propelled vehicle. As stated above the upkeep and maintenance of the police patrol for last year was \$807.97, and during the 12 months the car traveled close to 6,000 miles. It is difficult to compute the exact mileage, inasmuch as the speedometer was not placed on the car for several months after its delivery, but at the present time, a little over 13 months after its delivery, the speedometer shows a mileage of 5,201.7. Last year the fire patrol traversed 1,349.1 miles at a cost of \$883.41 for upkeep and maintenance, over \$500 of which was expended for tires. Chief Hosmer and Superintendent Welch, in speaking of the difference between the automobile and horse-drawn apparatus, state that there can be no comparison. Chief Hosmer has found that it is much cheaper to operate an automobile than use horses, and he is in hopes that in the near future there will be more automobiles in the department.

Battle Creek, Mich.—The National Board of Fire Underwriters has set the seal of its approval on a Jackson motor car used by the chief of the Fire Department of Battle Creek, Mich. Nowadays a Fire Department must be at least partially motor equipped, for the advent of the auto has revolutionized fire-fighting methods and the use of the gasoline-driven car has become extremely significant. In view of these facts the distinction granted the Jackson car was extremely complimentary. The inspector for the National Board of Fire Underwriters recently finished an inspection of the Battle Creek Fire Department. Speaking of the chief's car, a Jackson, made by the Jackson Automobile Company of Jackson, Mich., he said he believed this car to be the best adapted for fire-fighting service of any he had ever seen. This was partly due to its speed and power, which enabled it to get to fires promptly under all weather conditions, and partly on account of the well-selected equipment which it carries. This car has three extinguishers, an axe, a door-opener, a sledge hammer, wire cutters, crowbar, a complete set of lineman's tools, lifelines and a first aid to the injured outfit. It invariably gets to the fire first and gets to work before the heavier apparatus arrives. On the first seven runs made by the Battle Creek department after receiving this car the fire in each case was extinguished by the chemical extinguisher on the chief's car before the other apparatus arrived.

Paterson, N. J.—Visitors to the first annual automobile show of the Paterson Automobile Trade Association, which opens March 4, will have an opportunity to inspect one of the city's converted steam fire engines and combination tenders and chemical motor driven wagons. Many have seen these on the street in motion, but have thus far not had a close inspection of them. It is expected that this modern motor driven apparatus will be surrounded by a curious throng during the week the show is in progress. One of the engines is already in service and the other will be placed on duty after the show. Chief Staggs requested that space be allotted at the main entrance to the armory for the fire apparatus, so that in case of an emergency arising in which the services of the engine and tender might be required, they could be very easily run out of the armory entrance and away to any blaze that would require their services. The engine will stand in the armory in reserve and "loaded" for immediate service, just the same as if it stood in an engine house. Visitors will have a chance to see both apparatus fully equipped for duty. Mayor McBride believes that by having the apparatus on show under such favorable conditions the public will have a better opportunity to view for themselves in a practical way the character of the fire fighting apparatus in the Paterson department, and how the service is being improved and the danger of conflagration is being minimized through the rapidity with which the apparatus can be got to fires. The steamer that will be on display has a 110-horsepower motor and can go to fires at a speed of thirty or forty miles an hour.

## GOVERNMENT AND FINANCE

### Rush Commission Plan

Atlantic City, N. J.—Plans for submitting to the voters of the resort the proposition as to whether or not they desire the commission form of government have now reached such a definite stage that May 28 has been tentatively decided upon as the date for the special election. Eli H. Chandler, president of the recently organized Commission Government Association, stated that no difficulty was expected in securing the required number of signatures.

### Commission Form Winner

Madison, S. D.—The result of the election held in this city respecting the adoption of the commission form of municipal government, shows a large majority in favor of the plan, the vote being nearly five to one in the affirmative.

### Adopt Commission Government

Belle Fourche, S. D.—This city adopted the commission plan of government, making the commission consist of only three members.

Lead.—This city voted to make the commission form of city government consist of only three members. That there was not much interest in the matter was shown by the light vote cast.



## STREET CLEANING AND REFUSE DISPOSAL

### Spokane Will Have Clean-Up Week

Spokane, Wash.—Spokane will have a "clean-up week" in April, different from anything ever before attempted in the city, according to the announcement of Mayor Hindley. That the city may be scoured from end to end more thoroughly than at any of the past annual campaigns of this kind, the Mayor proposes a working agreement between the municipal crematory and Health Department and the division of the city into districts. The plan is that each district be given attention separately. A band of health inspectors will go down each side of every street and alley, giving orders to householders to clean up the back yards, the empty lots, etc., wherever conditions warrant. The health inspectors will be followed by crews from the municipal crematory with wagons ready to carry out the orders of the health inspectors at the expense of the house-owner, who must pay the regular crematory fee for the work done. "Every street in the city will be handled this way," said the Mayor. "By dividing into districts the work can be carried on to better advantage."

### Ice Scraper Used for Street Cleaning

Eric, Pa.—Superintendent of Streets Tracy has set a pace in the cleaning of streets. For several days past the various ward foremen acting under the direction of Mr. Tracy, have been having the ice cut from the street in huge chunks and carted away in wagons. This has been rather slow and last week Mr. Tracy borrowed from the Mutual Ice Company a big ice scraper. With this he has been working on the west side of State street. The ice and slush was rapidly granulated with this scraper and men following it with shovels threw the slush into wagons.

### New Orleans Will Hold Clean-Up Campaign

New Orleans, La.—The cleaner city executive committee of the Progressive Union, at their last meeting decided to enter upon a more aggressive campaign for cleanliness in the city of New Orleans, and to that end will take advantage of the offer of N. O. Nelson to employ an inspector, who will commence his duties on March 1. This inspector has been engaged and his duties will be to call the attention of violators to the ordinances, and if such violations are persisted in to follow it up with a charge against that person or persons, resulting in a fine, according to the status of the fault. Mr. Nelson is greatly interested in this kind of work, and has entered heart and soul into giving the committee the very necessary assistance required. George S. Smith, Commissioner of Public Works, is investigating the different systems used in the larger cities of the United States with a view to ascertaining what style of receptacle is used and where manufactured for the disposition of trash, peelings, etc.

## RAPID TRANSIT

### Largest Steam Turbine Ever Constructed

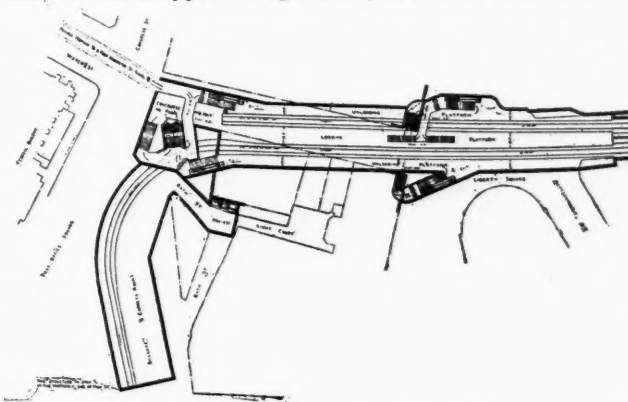
New York, N. Y.—The largest steam turbine which has ever been constructed has been contracted for by the Transit Development Company, affiliated with the Brooklyn Rapid Transit Company. It will be built at Pittsburgh and will be of 66,750 horsepower and have a capacity of 24,000 kilowatts. It will be installed in the Eastern District Brooklyn Rapid Transit power house, which supplies power over the entire system.

### Street Railway Tests New Fender

New Orleans, La.—A fender, that is said to have been used successfully on Chicago trolley cars, was given a test in New Orleans before Mayor Behrman and a number of officials. A special car was equipped with the apparatus, and a dummy was laid on the track and the fender under the car picked up the dummy and carried it along until the car stopped. There is a steel rod arrangement extending down from the front of the car the whole width, and when the obstruction hits that it trips the fender, which is made of wooden slats, and it drops to the track and receives the body and holds it so that it cannot get under the wheels.

### New Rapid Transit Line for Boston

Boston, Mass.—There seems no longer any doubt that Boston will, within a reasonable time, have a new rapid transit route. Favorable action has been taken on the plan which has been pending for a number of years to allow the electric roads approaching the city from the north to tunnel



PLAN OF NEW RAPID TRANSIT LINE.

under the harbor, construct a subway through part of the city to an underground terminal at the post office square. The illustration shows the plan for the terminal, which has the approval of the Rapid Transit Commission.

## MISCELLANEOUS

### City Farm for Children

Colorado Springs, Colo.—As a factor in a solution of the juvenile problem, a municipal farm for the boys and girls of Colorado Springs is contemplated, either in establishing such an institution in connection with the Myron Stratton home or by the city. Juvenile Judge John E. Little, Superintendent of Schools C. M. Cole and prominent women of the Civic League said that they would co-operate with a view of securing a municipal farm here. It is planned to have both boys and girls work on the farm during vacation time, receiving pay for their services.

### Municipal Autos Must Be Legibly Marked

New York, N. Y.—City Clerk Scully has sent out notices to the various city departments that in the future all city-owned automobiles shall have painted on the rear panel the words "City of New York" in letters five inches high. The notice of the ordinance further stipulates that all offenders should be subject to a \$10 fine. The reform is in keeping with that instituted by Borough President Steers when he first came into office to the effect that all city-owned automobiles should bear the insignia of their department. This was aimed at many joy-riding officials who used the automobiles of the city for their own amusement.

### "Pay As You Sit" Benches in Parks

San Jose, Cal.—Nickel in the slot park benches for the comfort and encouragement of "spooners" and the discouragement of loafers probably soon will make their appearance in public parks in the principal cities of the coast. A sample pair, the first manufactured, were tried out in City Hall Park here opposite the Auditorium Rink and were fancied greatly by members of the local park commission as well as students of both sexes, who are regular visitors of the auditorium five-cent dance. The commissioners have promised to recommend the installation of the pay as you enter benches in public squares and parks. The bench is operated by means of a slot at one end of the seat. The dropping of a coin releases a lock and the bench revolves slowly into position, locking automatically when empty.

### Clock Tower for Park

Hudson, O.—James Ellsworth, the millionaire who has made Hudson the "village beautiful," has decided to present the town a memorial in the shape of a clock tower to be placed in the village park. Mayor Sullivan has appointed B. C. Tibbits, L. Laudenslager and Grant Bliss as the board of public service which will have charge of the new water, sewage and electric light plants furnished by Mr. Ellsworth.

## LEGAL NEWS

### A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

#### Taxation—Validity—Inequalities

*Burkhart et al. v. City of Fitzgerald et al.*—The mere fact that certain lands within the city limits of Fitzgerald, owned by certain other persons, had been taxed, not ad valorem, but upon a valuation which was the difference between their value for agricultural purposes and their value as town lots, furnished no reason why the plaintiffs should not pay a tax on their property greater than the percentage of the values placed upon such agricultural lands for taxation. Even if it did, there was evidence tending to show that all agricultural lands within the incorporate limits were valued and taxed as other property therein. Supreme Court of Georgia, 73 S. E. R., 583.

#### Officers—Discharge—Veteran

*Caldwell v. City of New York.*—An honorably discharged soldier resigned employment with the city, and was entitled to reappointment within a year. Before the expiration of the year he sought employment with the city and received it upon consideration that he would execute a blank resignation, which might be used whenever the city had no further need of his services. After some time his resignation was accepted and later he was re-employed. Held that, as he was not discharged to give employment to another, he was not entitled to compensation for the time during which he did not work; it appearing that the city had no need of his services during that time.—New York Supreme Court, 133 N. Y. S., 167.

#### Construction of Contracts—Rights of Contractors

*Beckwith v. City of New York.*—If a prospective bidder for a municipal construction contract applied at the office to which he was directed for an inspection of the plan of the work, and was there shown a plan which, read in connection with the specifications, sufficiently described the work, and was given no intimation that there were other more detailed plans in existence, he was justified in submitting a bid based upon the specifications which he received, and the plan which he was shown, and can recover damages through being compelled to perform additional work not so disclosed. Though satisfied that he is being required to do more than his contract calls for, a municipal contractor may proceed and recover his consequent damages, not being required to refuse to proceed and sue upon a quantum meruit for what he has already done, if the question whether the thing required is embraced within his contract is fairly debatable.—New York Supreme Court, 133 N. Y. S., 203.

#### Purchase of Personality—Approval of Electors

*Perry Water, Light & Ice Co. v. City of Perry.*—Where the aggregate value of such personality received and accepted by the officer of a municipality under one transaction of purchase, or received with the consent of the owner of such personality, and applied to its use, exceeds the sum of \$500, the authority not being first had by the approval of a majority of the electors resident of such municipality, no liability therefor is created against such municipality.—Supreme Court of Oklahoma, 120 P. R., 582.

#### Torts—Liability—Unauthorized Maintenance of Quarry

*City of Bradford v. Clark.*—A municipal corporation is not liable to one whose horse, while driven on a street, was frightened by a quarry blast and ran away and threw him out, where the city's operation of the quarry causing the fright was unauthorized.—Noises outside of the limits of a street, amounting to a public nuisance, do not constitute a defect in the street.—Supreme Court of Appeals of Virginia, 73 S. E. R., 571.

#### Change of Grade of Street—Damages

*Webber v. Salt Lake City.*—A city proceeding lawfully and properly in changing an established grade of a street owned by it in fee is not liable in damages for the removal of shade and ornamental trees planted by the abutting owner and growing in the street, the removal being unavoidable in changing the street.—Supreme Court of Utah, 120 P. R., 503.

#### Governmental Duties—Non-performance—Liability

*Dyer v. City of Danbury et al.*—The duty of a city to remove a limb of a tree in a street overhanging a sidewalk and endangering travel because of its liability to fall is a public governmental duty, for the neglect of which there is no liability, unless imposed by statute.—Supreme Court of Errors of Connecticut, 81 A. R., 958.

#### Exploding Fireworks in Street

*City of New York v. Lloyd et al.*—To set off fireworks in a crowded city street is a public nuisance, rendering its creator liable, irrespective of negligence, for resulting damages.—New York Supreme Court, 133 N. Y. S., 118.

#### De Facto Officers

*Edwards v. City of Kirkwood.*—Where an attorney was paid the salary of city attorney and referred to himself as the successor in office of the preceding city attorney, that he failed to take the oath of office, notwithstanding Rev. St. providing that, where an appointee fails to take the oath of office his office shall be deemed vacant, did not prevent him from being a de facto officer, so as to preclude a claim of additional compensation for services in a special tax matter, rendered pursuant to a contract with the city collector.—St. Louis Court of Appeals, Missouri, 142 S. W. R., 1109.

#### Taxes—Penalty for Non-payment

*Louisville Car Wheel & Railway Supply Co. v. City of Louisville.*—The act of 1910, declaring that uncollected tax bills on the 1st day of May after the day on which they were listed with the tax receiver, shall bear interest at the rate of 1½ per cent. per month until paid, and that on July 1 there shall be added a penalty of 10 per cent. on the face of the bill, etc., is not retroactive in its effect, but operates only from the time it became effective, about April 1, 1910, and no additional penalty is added until July 1 following; and a delinquent taxpayer has three months after the act becomes operative within which to pay his taxes and avoid the imposition of the 10 per cent. penalty; and the statute is not unreasonable.—Court of Appeals of Kentucky, 142 S. W. R., 1043.

#### Sidewalk Contracts for Year

*Abbot v. City of Milwaukee et al.*—The statutes do not require a new contract for each sidewalk ordered to be remade thereunder, but the city may contract with the lowest bidder at the beginning of the season for the construction of sidewalks as they are needed throughout the year at a certain price, upon an order from the Board of Public Works.—Supreme Court of Wisconsin, 134 N. W. R., 135.

#### Damages for Injury—Filing Claim

*Karr v. Village of Alfred.*—Under village law, which provides, in case of a claim for damages for an injury to person or property by negligence, that a written verified statement of the claim be filed within six months, filing by sending the statement through the mail is insufficient where not shown to have been actually received by the village clerk.—New York Supreme Court, 132 N. Y. S., 1018.

#### Ordinances—Adoption—Proof

*Bell v. Town of Jonesboro.*—A city ordinance offered in evidence had at the end thereof the following recital: "Adopted February 15, 1910, J. D. Martin, mayor." The town clerk identified it as the ordinance mentioned in the minutes of the council introduced in evidence showing the passage thereof under a suspension of the rules, and he also testified to publication of the ordinance in the mode required by statute. Held, that such method of identifying the subject of the recorded action of the city council was proper.—Appellate Court of Alabama, 37 S. R., 138.

#### Street—Action for Injuries—Proximate Cause

*Dooling v. City of New York.*—In an action against a city for personal injuries to an infant by falling under the wheels of a ash cart, the refusal to charge specifically that if the jury find that the driver's act in leaving the horse unfastened on the highway was a proximate cause of the injury, they must find for plaintiff, was not erroneous, since the leaving of the horse unfastened might be the proximate and sole cause of the injury, and still not necessarily require that the verdict be for the plaintiff, as that act might be found not to be negligence, or the jury might find or impute contributory negligence.—New York Supreme Court, 132 N. Y. S., 1011.



## MUNICIPAL APPLIANCES

### Koehring Concrete Mixer for Street Pavement Construction

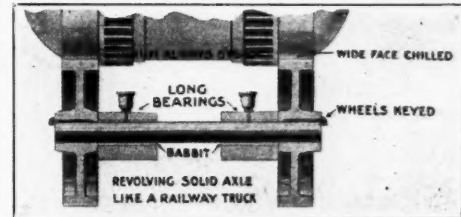
The Koehring Machine Co., Milwaukee, Wis., manufacturers of a drum concrete mixer for general uses, have given a great deal of attention to the development of a mixer for street paving purposes. The result is that they have developed a mixer, which does all the work of concreting except the delivery of material in a hopper on the ground and the fine grading and tamping of the surface of the finished work. Two sorts of difficulties have had to be overcome to accomplish the desired result—the construction of a good, cheap, concrete base: First, the machine must do enough of the ordinary labor to permit a small gang of men to do a large day's work. The labor of getting materials into the mixer and from the mixer to the face of the work must not be increased so as to equal the saving of machine mixing—a source of just complaint made by contractors regarding some concrete mixers. Second, the machine must be so constructed that it will not break down or clog. If it does either of these things all the saving in labor is eaten up by the cost of lost time of the gang of men.

The following explanation and illustrations of some of the details of the Koehring street paving mixer will show how the problems have been met. Good mixing is insured by buckets in the mixing drum, which alternate with the blades. Moreover, the buckets and blades elevate the material and let it fall over the inner end of the discharge chute, thus giving a new motion to the material. Besides doing good mixing the machinery must stand the work. More mixer troubles have, perhaps, been caused from wear in the runways and rollers supporting the

mixing drum than any other single part of the machine. The illustration shows how the Koehring overcomes the usual difficulty arising from rollers rotating on fixed bearings by keying their rollers onto the shaft in precisely the same manner as a railroad truck. Extending underneath the drum, at both sides of the mixer, are heavy trussed supports, with very long bearings for the shafts which are carefully babbitted and make possible perfect lubrication. These shafts are made of exceptionally heavy ground steel, and as they rotate in the bearings the wear is equalized on all sides, and since the rollers are rigidly attached to the shafts there is only chance for wear against the faces of the rollers. Since the runways are cast integral with the drum heads it is possible to use very wide runways with corresponding width of trunnion roller faces which are chilled to extreme hardness, insuring remarkably durable roller bearings.

In the street paving mixer the drum is mounted so as to deliver in the rear as shown in the diagram, the construction, however, of the same substantial character as that shown in the illustration. It is provided with traction drive for moving along the streets so that it can be kept in the exact location for most rapid work with the least handling and hauling of materials. No platforms or runways are required in loading; the material is shoveled directly into the elevating hopper. The concrete is delivered to the face of the work by means of a delivery boom and bucket. The standard length of the beam is 20 feet. The boom consists of an I-beam track, which is connected to the frame by a universal joint, which allows it to swing from one side of the street to the other in an arc of 180 degrees. The concrete delivery bucket

holds a full batch of the mixing drum, although it can be operated without causing any delay in half batches. The bucket is operated by power transmitted from the main drum gear to a reversible sheave drum around which a cable is passed and which is attached to both ends of the bucket trolley. One workman operates both the discharge of the drum and the movement of the bucket, and the bucket is so designed that it practically spreads the concrete on the street on its return from the end of the beam to the drum of the mixer. This bucket can also be provided with an automatic dump so that the bottom gates open automatically at any place where it is desired to deposit the concrete, and when the bucket re-



SUPPORTS OF KOEHRING MIXER

turns to the mixer the bucket gate closes automatically and the clutch disengages so that the bucket is left in position under the discharge chute.

### Oxy-acetylene Cutting Apparatus

The Davis-Bournonville Company, 90 West street, New York manufactures an oxy-acetylene apparatus for cutting metal which the Newark, N. J., Fire Department is considering using, mounted on an automobile, as a permanent piece of apparatus. A demonstration has been given of the value and practicability of the plan at the repair shops. It is believed that the cutting apparatus will be of value, particularly in effecting entrance into the basements of burning stores and warehouses.

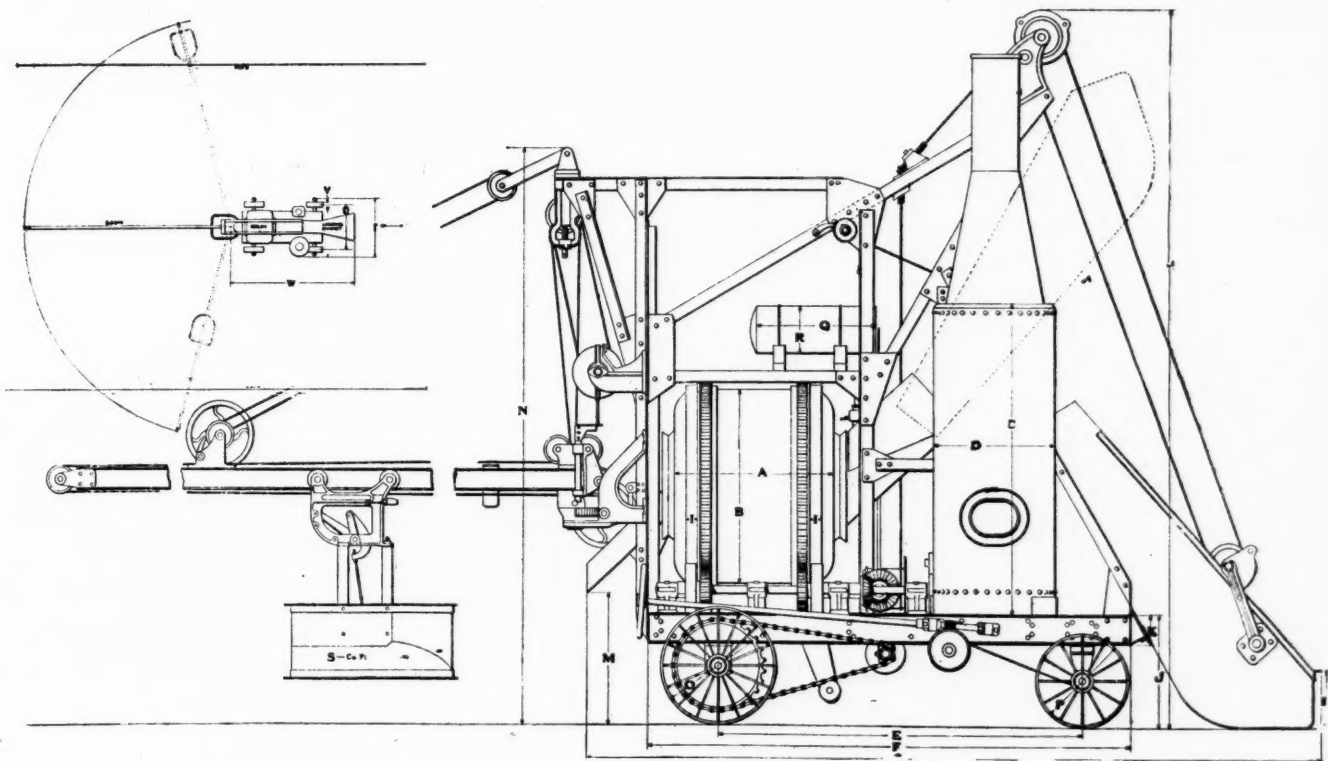
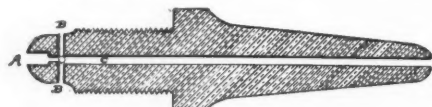


DIAGRAM SHOWING SECTIONAL VIEW AND SOME DETAILS OF KOEHRING STREET PAVING MIXER.

Under present conditions it is often necessary to break through the glass and metal sidewalk lights generally found in front of such stores. With axes and hammers the process is slow and difficult. Solid iron shutters and doors are sometimes encountered and are equally difficult to break through. With an oxy-acetylene apparatus mounted on a chassis the trouble would be minimized. The flame cuts through iron like a hot knife through butter.

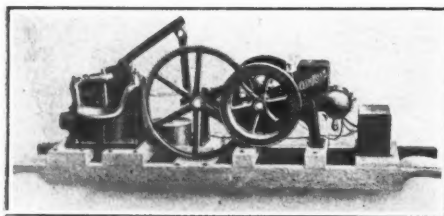
The Davis-Bournonville apparatus gives a flame having a temperature of about 6,000° F. The appliance consists of a torch and generators or storage tanks for supplying oxygen and acetylene, together with suitable devices for regulating the flow of the gases. It consists of two small pipes or conduits, terminating at one end with hose connections, the other ends connecting in a recessed head that receives the torch tips. The pipe for acetylene is screwed into a cylinder about one and one-half inches in diameter, which serves for a handle. Hose cocks are fitted into the rear of the torch. Standard torches are of two sizes, twelve and nineteen inches in length. Each of these torches is fitted to receive an attachment for cutting steel or iron. Tips of different sizes fit the torch.



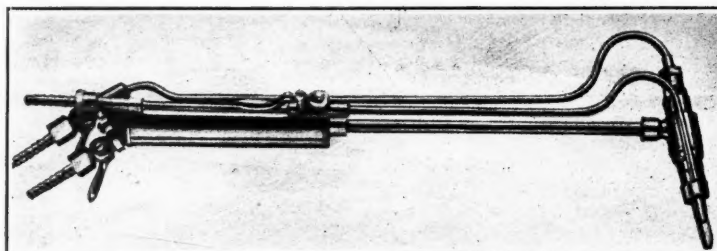
DETAIL OF ACETYLENE TORCH.

In the above illustration, A is the oxygen inlet; BB the acetylene inlets, and C the mixing chamber. The oxygen and acetylene inlets are exactly proportioned to each other in each size of tip, as well as the length and diameter of the mixing chamber. The oxygen is admitted under higher pressure than the acetylene, acting as an injector. The acetylene is admitted under less pressure, at right angles to the oxygen jet, and tends to break the column, and this together with the small diameter of the mixing chamber, and the consequent friction of its walls, gives a perfect mixture. As small as the diameter is, it is six times larger than the oxygen inlet, and this greatly lessens the velocity of the gases, permitting them to be discharged under a pressure at the point of the tip that does not blow away the molten metal, which is a material advantage in welding. This is claimed to be the only tip which entirely separates the oxygen and acetylene until they actually enter the mixing chamber, which is entirely within the tip itself.

For fire department service tanks of acetylene and oxygen would presumably be used. These should have suitable regulators, different, of course, for each tank. The regulators are made by the Davis-Bournonville Company, who also manufacture generating apparatus for both acetylene and oxygen. Their acetylene machine generates



DIAPHRAGM PUMP AND ENGINE.



DAVIS-BOURNONVILLE ACETYLENE CUTTING TORCH.

acetylene directly from carbide. In the oxygen generator chlorate of potash and manganese dioxide are used.

#### Oshkosh Contractors' Pumps

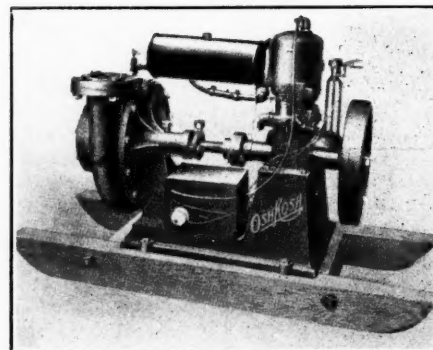
The Oshkosh Manufacturing Company, Oshkosh, Wis., manufactures contractors' pumps in five styles, which they keep in stock for immediate shipment. There are centrifugal pumps, driven by gasoline engine, driven by belt, by motor and by steam engine, and a diaphragm pump driven by gasoline engine. Of these two are illustrated, the centrifugal gasoline-driven pump and the diaphragm gasoline-driven pump. The centrifugal pump is designed to handle a large volume of water at a moderate cost. The engine is of the valveless type. The advantage of this type is the ability to furnish the power needed at the minimum weight, portability being the feature that appeals strongly to the contractor. This outfit is made in five sizes, the smallest being 2½-inch suction, 2-inch discharge, 2 horsepower, 125 gallons per minute; weight with skids, 360 pounds; the largest size is 8-inch suction, 6-inch discharge, 12 horsepower, 1,100 gallons per minute; weight with skids, 1,850 pounds. The steam-driven outfits have vertical steam engines, the smallest being 3½ by 3¼ inches, and the largest 5½ by 6 inches, corresponding respectively to capacities of 265 and 1,000 gallons per minute. The belt-driven outfits are made in the same sizes as the gasoline outfits. In cities where electric power is available the use of motor-driven machinery for contractors seems to be meeting with increasing favor. The kind of current, voltage and phase have to be considered in selecting the motor. Oshkosh centrifugal pumping outfits are connected by means of gears—one steel gear and one cloth gear. It is said that the cloth gear will wear and stand the weather better than any other gear known. It also has the advantage of eliminating the noise which would result from the use of two steel gears.

The gasoline-driven diaphragm pumping outfit is designed to do away with expensive hand-pumping, and, of course, has a limited capacity—60 to 120 gallons per minute. The engine is two horsepower. It is of the four-cycle type. At every stroke of the pump lever it develops a lift of 1,000 pounds. The power is transmitted from the engine to the pump by means of a gear wheel and crank shaft. The idea of the crank shaft is to do away with all side motion and balance the complete outfit.

#### Tar Tank

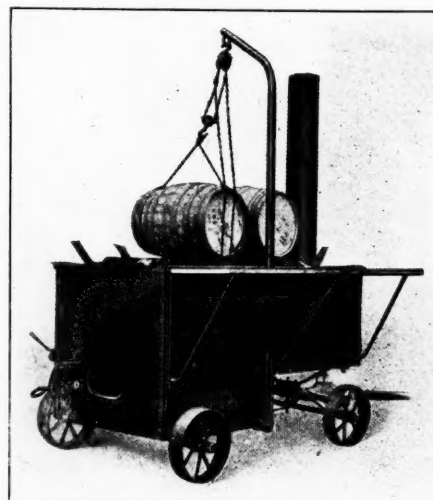
The Albany Belting & Supply Co., 372 Broadway, Albany, N. Y., manufacture a convenient street kettle of 400 gallons capacity, suitable for melting tar or asphalt in connection with street paving and bituminous treatment of roads. The kettle weighs 330 pounds and is made of 3-16-inch boiler plate, reinforced with angle iron. The tank is 96

inches long, 48 inches wide and 48 inches high. The fire-box measures 48 by 48 inches, and is lined on four sides with cast iron plates, with 1½-inch air space between lining and tank to prevent warping and to hold heat. The grates are of cast iron and are sectional. The boiler is made of 3-16 boiler plate, rolled in one piece, thus avoiding any chance of leaking. It is made separate from the tank and held in place by bolts. A convenient device for lifting the barrels into the tank is made of ex-



CENTRIFUGAL PUMP AND ENGINE.

tra heavy wrought iron pipe, with supporting brackets on both sides of the tank so that it may be worked from either side. The stack is 8 feet high, insuring good draft and carrying smoke above men. A light sheet iron cover, suitably braced, is provided. Two wooden platforms, one for men to stand on and the other to support barrels, are supported on hinged arms which swing out of the way when not in use. There are two 2-inch quick-opening lever gate valves, connected to 2½-inch pipe, placed one in front and one on the side, running through the fire-box and combustion chamber and connected so they can be easily cleaned.



TAR MELTING KETTLE.



## NEWS OF THE SOCIETIES

### The Municipal Government Association of New York State

The objects of this association are stated on a blank to be used as an application for membership, as follows:

First—Home rule for the cities, counties and villages of the State of New York by the grant of adequate powers of local self-government.

Second — Electoral arrangements which shall permit the free choice of municipal candidates as opposed to national party domination.

Third—The enactment of a general municipal corporation act, enabling the voters of any municipality to adopt a commission form or other simplified form of government.

Fourth—Such legislation and constitutional amendments as are necessary to provide and guarantee democracy in the government of the municipal subdivision of the State.

The officers of the society are: President, Hon. John K. Sague, Poughkeepsie; secretary, Ralph Bowman, New York city; treasurer, Sam A. Lewisohn, New York city; vice-presidents, Prof. Charles A. Beard, New York city; Hon. Samuel A. Carlson, Jamestown, N. Y.; Dr. Woodford J. Copeland, Elmira, N. Y.; William H. Crosby, Buffalo, N. Y.; Dr. John H. Finley, New York city; Charles Gibson, Albany, N. Y.; Dr. Elgin R. L. Gould, New York city; Giles B. Stilwell, Syracuse, N. Y.; F. S. Tomlin, Brooklyn, N. Y. The directors are: Robert S. Binkerd, New York city; Ralph Bowman, New York city; Richards S. Childs, Brooklyn, N. Y.; J. Hampden Dougherty, New York city; Prof. Herman L. Fairchild, Rochester, N. Y.; Darwin R. James, Jr., Brooklyn, N. Y.; George W. Knox, Niagara Falls, N. Y.; Sam A. Lewisohn, New York City; Howard T. Mosher, Rochester, N. Y.; Charles Rohlfs, Buffalo, N. Y.; John K. Sague, Poughkeepsie, N. Y.

### Arkansas Good Roads Association

The annual convention was held in Little Rock February 15. The convention adopted resolutions asking the Arkansas delegation in Congress to insist on a provision in the Memphis bridge bill providing for a roadway and suitable and substantial approaches, also one asking the department of civil engineering in the University of Arkansas to make more prominent the department of highway engineering.

The following addresses were delivered at to-day's session: "Road Construction," Joseph Asher of Little Rock; "How to Secure Co-operation of the People in Road Improvement," Thurston Farmer, Hot Springs; "Improvement of Suburbs and Outlying Country by Street Railways," Charles J. Griffith; "Dragging the Roads—The King Drag," Clay Sloan of Black Rock; "The Advantage of the Proposed Pine Bluff and Little Rock Pike," C. M. Philpot of Pine Bluff; "Road and Drainage Engineering," E. A. Kingsley of Little Rock; "State Aid to Good Roads," Hal L. Norwood of Little Rock; "Evolution of Road Building in Arkansas," S. Q. Sevier of Camden; "Economy in Road Work," E. J. Hahn of Little Rock; "Good Roads, the Farmer's Best Friend," John C. Small of Little Rock; "Iron Culverts in Road Work," C. C. Crane of Little Rock;

"The Texarkana-Little Rock Pike," George R. Payne of Texarkana.

The following officers were elected for 1912: President, Harry E. Cook, Lake Village; vice-president, W. H. Harvey, Montene; secretary, George R. Brown, Little Rock. Executive committee—W. M. Mixen, Marianna; W. B. Folsom, Brinkley; E. Bee Guthrie, Sulphur Springs; Jesse A. Harp, Fort Smith; Joseph Asher, C. M. Philpot and Sam Q. Sevier; delegates to National Drainage convention in New Orleans, April 10—H. L. Rummel, W. M. Kavanaugh, J. F. Coston, Osceola; Parker C. Ewan, Clarendon; George A. Cole, Russellville; George Sengel, Fort Smith; Joseph Asher, Little Rock; Ben J. Altheimer, Pine Bluff; I. M. Worthington, Eudora. Harry Cook is ex-officio chairman of the delegation.

The convention adopted a resolution inviting the good roads associations of Oklahoma and Missouri to meet with the Arkansas association at Montene, Ark., July 3 and 4, 1912, the object being to secure co-operation in the building of roads between the three States.

### Maine State Association of Fire Chiefs

The Maine State Association of Fire Chiefs was organized February 16 at the Central Fire Station in Portland. There was a large attendance and it is expected that more names of fire chiefs will be added to the present list. Matters of interest to the cities relative to the fire equipment and fire department work will be discussed at the meetings, and it is further proposed to work in a body rather than individually, for the equipment of such laws as, according to the belief of the members of the association will be of benefit to the towns and cities having fire departments.

Though Chief Flaherty was the prime mover in the establishment of the organization it was impossible for him to attend the meeting by reason of a severe illness.

The officers elected are: President, Chief P. H. Flaherty, Portland; vice-president, Chief W. S. Mason, Bangor; treasurer, Deputy Chief Thomas Payne, Portland; secretary, Chief W. E. Bennett, Sanford. A committee was also appointed to draw up rules and by-laws. The next meeting will be held at Augusta. The date has not been set. Those present at the meeting were Deputy Chief Thomas Payn, Portland; Chief Charles W. Bowker, South Paris; Chief Edward J. Sullivan, Biddeford; Chief S. T. Soule, Gardiner; Chief W. S. Mason, Bangor; Chief Walter W. Berry, Waterville; Chief J. A. Buckley, Augusta; Chief N. N. Kendall, Freeport, Me.; Chief M. J. Moriarty, Lewiston; Chief G. L. Stackpole, Sanford; Chief W. E. Bennett, Sanford; Chief James H. Scott, Bath; Chief C. E. Greeley, Yarmouth; Chief H. R. Piper, Presque Isle.

### Engineers' Society of Northeastern Pennsylvania

The fifteenth annual banquet was held February 15 at Hotel Casey, Scranton, Pa. More than 250 members and guests were present. Edward M. Bigelow, chief of the State Highway Department, spoke briefly on the work of his department and said that if citizens voted favorably next year on the

\$50,000,000 appropriation Pennsylvania would have roads equal to any of the sister States. He said that his department intended to build 300 miles of roads this year. M. W. Alexander, Lynn, Mass., of the General Electric Company, spoke on the "Industrial Value of Engineering Education." President Mason D. Pratt, Harrisburg, spoke of the "State Federation of Engineering Societies," stating the advantage to local societies of belonging to the association. Judge E. C. Newcomb spoke of the "Need for Engineers in To-day's Business."

### Utah League of Municipalities

The annual convention was held at Salina February 16-17. Mayor J. F. Martin delivered the address of welcome and First Vice-President W. H. Kuhre, Sandy, responded. At the evening meeting Dr. T. B. Beatty spoke on "Public Health." A banquet was given in the Opera House. The following was the Saturday programme: Music; "Uniform Ordinances of the Towns and Cities," George Christensen, Mt. Pleasant; discussion; "Harmonious Relation of City and County Officials with Relation to State Roads in Cities," R. R. Lyman, Salt Lake; election of officers, designation of time and place of next meeting, miscellaneous business, etc.

The afternoon programme was: Music; "Juvenile Court and Delinquency," Judge McMaster, Salt Lake City; "Volunteer Fire Department," W. W. Wilson, Sandy; discussion; music; remarks, Governor William Spry. The next meeting will be held at American Fork, January 10-11.

### Iowa Engineers' Society

The annual convention was held at Davenport February 21-22, about 60 members being in attendance. Contracts and specifications for paving and sewers was one of the chief topics under consideration. Theodore S. De Lay, Clinton, had written before the convention opened to sixty cities for outlines of their methods of letting contracts. The development of water power was another topic given special attention. Visits were made to the water power plant which develops power for the Rock Island arsenal and to the big plant under construction at Keokuk.

The following officers were elected: F. A. MacDonald of Davenport, president; P. C. Gaynor, Sioux City, vice-president; S. M. Woodward, Iowa City, secretary-treasurer; Paul Beer, Des Moines, and T. R. Warriner, Cedar Rapids, directors.

### New England Water Works Association

The March meeting of this association will be held at Hotel Brunswick, Copley Square, Boston, Wednesday, March 13, 1912. The following papers will be presented:

"How the Water Emergency at Worcester, Mass., Was Handled in the Summer of 1911, together with a Brief Description of Worcester's Sources of Water Supply," by Frank C. Kimball, Civil and Hydraulic Engineer, Boston, Mass.

"Some Water Supply Problems Encountered in the Semi-Arid Regions of the United States," by Clarence Goldsmith, assistant engineer, High Pressure Fire Service, Public Works Department, Boston, Mass.

George W. Batchelder, Worcester, Mass., is president, and Willard Kent, Narragansett Pier, R. I., secretary.

### Municipal Engineers of the City of New York

The officers of the Municipal Engineers for the year 1912 were elected at the annual dinner of the society on January 24, as follows: President, Sidney W. Hoag, Jr., deputy chief engineer of the Department of Docks and Ferries; first vice-president, Alfred D. Flinn, department engineer, Board of Water Supply; second vice-president, Theodore S. Oxdolm, engineer of construction, Borough of Richmond; secretary, Clarence D. Pollock, acting chief engineer, Bureau of Highways, Borough of Manhattan; treasurer, Herman K. Endemann, assistant engineer, Topographical Bureau, Borough of Queens.

### Calendar of Meetings

- March 7-12.**  
International Brick and Clay Products Exposition—Coliseum, Chicago, Ill.—Office, 815 Chamber of Commerce Bldg., Chicago, Ill.
- March 11-16.**  
National Association of Cement Users.—Annual Convention, Kansas City, Mo.—Edward E. Krauss, Secretary, Harrison Building, Philadelphia, Pa.
- March 14-21.**  
First Annual Kansas City Cement Show—Convention Hall.—J. P. Beck, General Manager Cement Products Exhibition Co., 72 W. Adams St., Chicago.
- March 28-29.**  
American Society for Testing Materials.—Annual Meeting, New York City.—Edgar Macbury, Secretary, University of Pennsylvania, Philadelphia, Pa.
- April 16-17.**  
Tri-State Water and Light Association of the Carolinas and Georgia.—Annual Meeting, Salisbury, N. C.—J. W. Neave, Secretary, Salisbury, N. C.
- June 3-8.**  
American Water Works Association.—Annual Convention, Louisville, Ky.—John M. Diven, Secretary, Troy, N. Y.
- June 10-12.**  
Mayors Conference of New York.—Third Annual Meeting, Utica, June 10-12.—Mayor C. C. Duryee, President, Schenectady, N. Y.—C. C. Capes, Secretary, New York.

### Columbia University Lectures on Highway Engineering

In connection with the graduate course in highway engineering the following illustrated lectures will be given during the month of March by non-resident lecturers in highway engineering at 8.0 p. m., in 402 Engineering.

March 4—"Sand-Clay Roads and Oil-Cement-Concrete Pavements," Logan W. Page, director, United States Office of Public Roads, Washington.

March 8—"Mixing Plants for Bituminous Pavements," Francis P. Smith, chemical and consulting paving engineer, New York city.

March 11—"Comparison of Pavements," George W. Tillson, consulting engineer to the president of the Borough of Brooklyn, New York city.

March 15—"The Construction and Maintenance of Park Roads," John R. Rablin, Massachusetts Metropolitan Park Commission, Boston.

March 25—"The Organization of the State Highway Department of New York," John A. Bensel, New York State Engineer, Albany.

March 27—"Asphaltic Crude Oils and Their Use in Highway Construction," Dr. Alfred Sommer, consulting chemist, Philadelphia; or

"The Construction and Maintenance of European Roads," Arthur H. Blanchard, professor of highway engineering, Columbia University.

## PERSONALS

ARCHIBALD, JOHN, Cincinnati, O., chief of the Cincinnati fire department, has resigned and will be placed on the firemen's pension list.

BEMIS, EDWARD W., Chicago, Ill., is preparing a report on telephone rates for the city of Chicago. He is also assisting the cities of Paterson and Passaic, N. J., in their attempt to secure from the New Jersey Public Service Commission a lower price for gas.

CHAFFIN, WENDEL W., Fort Wayne, Ind., has tendered his resignation as a civil engineer in the office of Division Engineer Fred Graham, of the Pennsylvania company, and will on February 15 assume the duties of Assistant City Engineer under Frank M. Randall.

LAMBERTON, A. B., Rochester, N. Y., has been re-elected president of the Park Board.

OURS, HENRY F., HON., Buckhannon, W. Va., died at his home January 29. Mr. Ours, who was a member of the house of delegates at Charleston and a prominent ex-sheriff of Upshur county, had been recently elected Mayor of Buckhannon.

FRESHNEY, SAMUEL A., Secretary and General Manager of the Grand Rapids, Mich., Board of Public Works, has resigned, his resignation to go into effect May 1. Mr. Freshney has filled this position for seven years and his administration has attracted favorable attention in Grand Rapids and other cities.

GEOROLD, CHAS. A., Albany, N. Y., has been appointed Chief of Police.

KITCHLINE, A. L., Dover, Del., has been appointed Chief Engineer of the Municipal water and light plant.

NORTON, WM. I., Ogden, Utah, has been appointed Chief of Police.

PARKER, HAROLD, Boston, Mass., on Friday, February 9, delivered a lecture on "Contracts and Specifications" before the graduate students in highway engineering at Columbia University, New York city.

POLLOCK, CLARENCE D., New York City, has resigned his position as acting chief engineer of the Bureau of Highways of Manhattan to accept that of engineer in charge of paving of the City of Havana, Cuba, this paving being a part of the sewerage and paving contract of which A. M. Brosius is chief engineer and which is said to be the largest contract ever let for this kind of work.

SPENCER, HENRY A., chief of the Chelsea, Mass., Fire Department, who has been connected with the department more than forty years, has been recommended for retirement on half pay by Mayor James H. Malone.

VAN DUYN, RALPH, Newark, N. J., has been appointed Assistant Designing Engineer, New York City Board of Water Supply. Mr. Van Duyn has been an assistant engineer, stationed at White Plains, N. Y., for several years.

WARNER, CHAS. E., electrical engineer; Edward S. Cobb, mechanical and hydraulic engineer, and Edward Johnson, hydraulic engineer, Los Angeles, Cal., have been appointed as a committee on the aqueduct investigation.

WHELAN, JOHN W., Elizabeth, N. J., has been unanimously re-elected President of the Board of Health.

WOODRUFF, CLINTON ROGERS, secretary of the National Municipal League, is in Los Angeles to gather data to be used in outlining a plan for Los Angeles city charter.

## INDUSTRIAL NEWS

**Cast Iron Pipe.**—Chicago. A number of good municipal contracts have been placed. Quotations: 4-inch, \$27; 6 to 12-inch, \$25; 16-inch and up, \$24.50. Birmingham—Local foundries are well supplied with orders for the next four months. Quotations: 4 to 6-inch, \$23; 8 to 12-inch, \$22; over 12-inch, average, \$21. These prices are firm for small orders. New York—Private buying is much in excess of that for the corresponding period last year. Quotations: 6-inch, carloads, \$22 to \$23.

**Lead.**—The situation is unchanged. Quotations: New York, 4c.; St. Louis, 3.925c.

**Cement Freight Rates.**—Charges that the United States Steel Corporation had exerted its influence on the railroads to grant discriminatory freight rates in favor of the Universal Portland Cement Company of Universal, Pa., figured prominently in a case decided February 26 by the Interstate Commerce Commission. The commission directed the Baltimore & Ohio and nearly all other railroads in the East and Central West to readjust their rates on cement and to place them on a parity as between competing concerns. The complainant was the Alpha Portland Cement Company of West Virginia. It was charged that the Universal Company was substantially a subsidiary of the Steel corporation and that it obtained favorable rates through the influence of the big corporation over the railroads. This allegation was denied, but the commission held that the fact that discriminatory rates had been granted the Universal company had been established.

**Paving Brick.**—At the annual meeting of the stockholders and directors of the Purington Paving Brick Co., Galesburg, Ill., the following board of directors was named: D. V. Purington, F. G. Matteson, George C. Prussing, C. D. B. Howell, W. E. Phillips, P. T. Walsh and Chas. H. Chamberlain. The board of directors named the following officers for the ensuing year: D. V. Purington, chairman of the board; F. G. Matteson, president; Geo. C. Prussing, C. D. B. Howell, vice-presidents; W. H. Terwilliger, secretary; C. H. Chamberlain, treasurer; and W. G. D. Orr, general manager. It was voted at the meeting to improve yards Nos. 2 and 4. The report for the past year was a very satisfactory one. During the year the company manufactured 101,000,000 7-pound brick and handled over 12,000 cars of brick.

**Paving Brick.**—The Scioto Fire Brick Co., Portsmouth, O., will go into the manufacturing of paving brick this season. This decision was reached at the recent annual meeting of the company. The officers of the company recently elected follow: President, C. W. Turner; vice-president, R. A. Mitchell; secretary, Samuel Reed; treasurer and general manager, Arthur Turner.

**Adjustable Drawing Table.**—A rigidly constructed drawing table having a wide range of vertical and horizontal adjustments has been brought out by the American Drafting Furniture Company, Rochester, N. Y. The frame of the table is composed of enamel finished castings and 1½-inch pine is employed for the top, which is made in three sizes ranging from 37 x 48 to 48 x 72 inches. The base of the table is either 42 or 48 inches wide.



**Street Telephones for Electric Company.**—The Rochester Railway & Light Company, Rochester, N. Y., has installed 35 street telephones for the use of its employees. Every employee of the company, in both gas and electric departments, will be provided with a key which will permit him to use the telephone. The 'phones are installed for the most part on light and telephone poles, which saves any additional poles in the street. However, it has been found necessary in several instances to put up special standards. A vast amount of time will be saved by the employees. With the new system the repairmen can go immediately to the telephone and communicate directly with the office. In the case of accidents, or lights out, or dangerous conditions, relief and assistance is directly at hand. Superintendent Yawger expects from this time on that not a single light in the city would remain out at night for longer than half an hour.

**Riveted Steel Pipe.**—The William B. Pollock Company, Youngstown, O., have published in booklet form an article reproduced from the *Engineering Record* describing and illustrating the methods of supplying and erecting a large riveted steel pipe line and penstocks for a 20,000-horsepower hydroelectric plant. The William B. Pollock Company is thoroughly equipped to undertake the erection of riveted steel pipe of from 24 inches diameter up to any size for high pressure water lines, penstocks, feeder pipes, flumes, draft tubes, etc., for water power development anywhere, or for supplying the materials riveted up in convenient handling sections or for supplying the plates all punched, formed and matched ready for erection.

**Motor Fire Apparatus.**—An announcement to the effect that the Olds Motor Works of Lansing, Mich., will add to their line fire-fighting and other equipment for municipal service has just been made by W. J. Mead, vice-president and general manager of this company. The Oldsmobile chassis for several seasons past has been used for this work and for three years this company has carried on extensive experiments with fire-fighting apparatus. Mr. Mead says that for the present the combination chemical and hose wagons, together with police patrols and ambulances, will represent the major part of the output, and that the company is now prepared to go ahead and accept orders for same.

**Free Garbage Cans.**—The National Civic Street Cleaning Company has offered to supply householders of Birmingham, Ala., with garbage cans of uniform size and style, provided that they are allowed to place advertisements upon them. The saving to the city is estimated at from \$1,500 to \$2,500, but commissioners have not as yet given their consent. It is possible the matter may be settled by referendum.

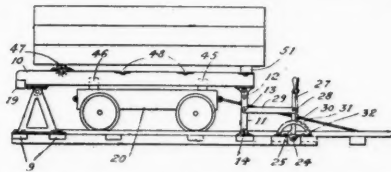
**Cement.**—The Piedmont Portland Cement Company, Portland, Ga., has decided to issue \$250,000 of bonds for the purpose of increasing the output of the plant to 1,500 barrels a day. New machinery for the purpose will be installed about May 1. J. C. Bass is president.

**Crushing Plant.**—The Tiffin Crushed Stone Company will install considerable new machinery in its plant at Ranger, Tex. It is to be made one of the largest plants of its kind in the State.

## PATENT CLAIMS

**1,017,749. MACHINE FOR TRANSFERRING LOADS OF MATERIAL.** Frank E. Gunther, Minneapolis, Minn. Serial No. 611,462.

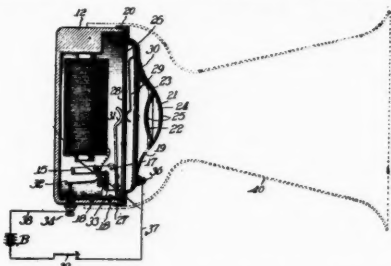
In combination with a truck for transporting material, oscillating means positioned above the top plane of the truck or receiving material, means to oscillate said receiving means so as to cause one



end of the material to rest upon the truck, and a rotatable member on the receiving means holding the other end of the material and adapted to release the material and permit the same to be transferred to the truck when said truck is withdrawn from beneath said receiving means.

**1,017,689. ELECTROWHISTLE ALARM.** Charles H. Rettmann, Chicago, Ill. Serial No. 625,510.

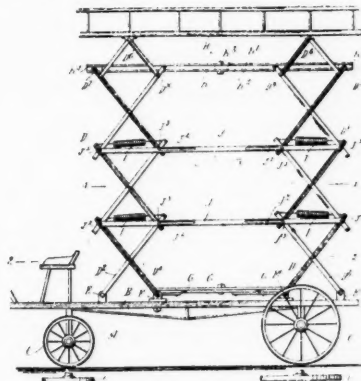
In a device of the character described, the combination with a casing, an electromagnet therein, of a cover therefor, means on the cover operable by impulses



of air to produce sound, a diaphragm, and diaphragm moving means associated with said diaphragm and magnet to produce impulses of air for the sound producing means.

**1,018,338. FIRE APPARATUS.** Harry Pines, New York City. Serial No. 661,248.

A fire apparatus, comprising a truck, a pair of raising and lowering lazy tongs having the outer lower members pivoted on the said truck, a platform pivotally attached to the upper ends of the said pair of lazy tongs, slides mounted to slide



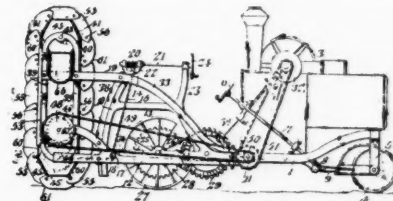
toward and from each other on the said truck and connected with the inner lower members of the said pair of lazy tongs, and an actuating lazy tong disposed horizontally and connected with the lower inner members of the said pair of lazy tongs.

**1,017,720. CONCRETE MIXING MACHINE.** Harris Morgan Whitcomb, Albany, Wis. Serial No. 618,467.

A mixing machine comprising a shell or drum having overlapping plates at one end with openings between them, a rotatable shaft with a spider therein to which one end of said drum is secured, said plates being also secured to a hub on said shaft, bearings for said shaft, and a plurality of inclined segmental plates secured to the inner face of said drum; said plates being spaced and the plates of adjacent series being staggered.

**1,017,894. ROAD GRADER AND ROLLER.** Charles A. Landon, Columbus, O. Serial No. 544,373.

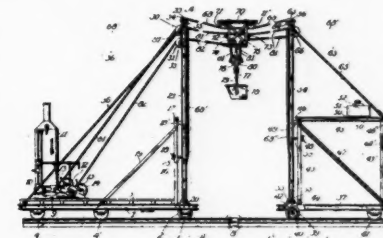
A road grader comprising a self moving road roller having front rolling wheels and a rear rolling and steering wheel, an elongated frame carried by the road roller structure and extending in advance of the front supporting members of the road roller and also extended to the rear of the front rollers of the road roller and there pivoted to the road roller structure, means independent of the road roller for elevating and lowering the frame with relation to the surface to be treated in a direction substantially perpendicular thereto, said means yielding to upward movements of the elongated frame, an endless elevating excavator carried by said frame in advance of the supporting members of the road roller and having a run movable in shearing or stripping relation to the surface to be



graded and of a width substantially the same as the road engaging portions of the road roller, and means for actuating the excavator at relatively different speeds with respect to the speed of travel of the road roller.

**1,018,275. EXCAVATOR BUCKET.** Emile E. Shnoble, Chicago, Ill., assignor to Shnoble & Quinn, Chicago, Ill., a Partnership. Serial No. 492,876.

In an excavator bucket, the combination with a bucket body having a forward cutting edge and an open rear end, of a closure for said rear end mounted on said bucket body, a draft member connected to the forward portion of said bucket body above the center of gravity of the latter, and means connecting said draft



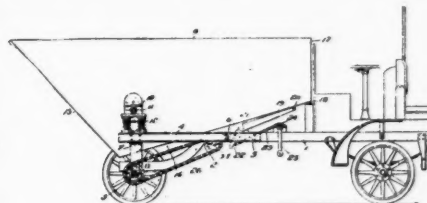
member and closure to hold the latter in closed position under pull on said draft member, substantially as described.

**1,017,706. PAVING BLOCK.** Edward A. Tracy, Boston, Mass. Serial No. 633,697.

As a new article of manufacture, the paving block herein described, composed of a block having a recess in its tread face extending longitudinally with respect thereto, and a longitudinal kerf arranged in and medially disposed with respect to said recess, and a grid arranged in said kerf, the upper edge portion of which projects therefrom and occupies a position in the recess and terminates approximately in the plane of the tread face of the block.

**1,018,119. AUTO GARBAGE TRUCK.** George W. Lally, Boston, Mas. Serial No. 611,456.

An apparatus of the kind described, comprising a vehicle framework having its rearward portion offset downwardly adjacent the rear axle, laterally offset portions fixed to the framework and extending rearwardly, and a receptacle body



mounted on horizontal pivots and having support on said laterally offset rearwardly extending portions.

## THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS</b>				
Wisconsin	Neenah	Mar. 9, 2 p.m.	Constrn. sheet asphalt, concrete or cement asphalt block, Sarcolithic, tar macadam or creosote block pavement.	J. P. Keating, Sec'y Bd. Pub. Wks. Otto T. Boggs, Village Clk.
Ohio	Richwood	Mar. 9, 2 p.m.	Grading, draining, curbing and paving street.	Board of Public Works.
Wisconsin	Racine	Mar. 9, 10 a.m.	Constrn. 11,000 sq. yds. pav't, 2,200 ft. concrete gutter, 2,700 ft. combined curb and gutter.	W. F. Whittier, County Surveyor. A. M. Sloan, Comm.
Ohio	Delaware	Mar. 9, 1 p.m.	Constrn. number of roads.	City of Santiago.
Tennessee	Chattanooga	Mar. 9, 10.30 a.m.	Resurfacing with asphalt.	
Chile	Santiago	Mar. 10, 10 a.m.	Constrn. 70,000 meters asphalt pavement.	
Alabama	Mobile	Mar. 11, noon	Furn. 100,000 cu. yds. chert, clay gravel, sand gravel or oyster shells.	Board of Revenue. J. J. Campbell, Clk.
Michigan	Pigeon	Mar. 11	Constrn. 15 miles macadam road.	
Indiana	Indianapolis	Mar. 11, 10 a.m.	Furn. 210 carloads of crushed stone and 40,000 gal. of tarvia binder or equal.	W. T. Patten, County Aud.
Canada	Westmount, Que.	Mar. 11	Pavg. Western avenue.	Arch. Currie, City Surv.
Indiana	Mt. Vernon	Mar. 11, 2 p.m.	Constrn. gravel roads.	J. B. Haines, County Aud.
Louisiana	New Iberia	Mar. 11	Constrn. 9½ miles road.	F. M. Kerr, State Engr.
Michigan	Muskegon	Mar. 11 (about)	Pavg. 4,956 yds. bit. macadam or other pavements.	E. H. Tellman, City Recorder.
Iowa	Muscatine	Mar. 12	Pavg. streets; cost, \$31,000.	C. H. Young, City Engr.
Indiana	S. Whitley	Mar. 12	Constrn. 17,176 yds. pavement.	M. C. Gerard, Chm. Town Bd.
Missouri	Kansas City	Mar. 12, 2 p.m.	Constrn. asphalt, concrete macadam, paving and sidewalk.	E. E. Purcell, Sec'y Bd. Pub. Wks.
Mississippi	West Point	Mar. 12	Constrn. 91,555 sq. ft. novaculite macadam.	J. L. Young, City Clk.; C. L. Wood, Engr., Columbus, Miss.
Louisiana	Bastrop	Mar. 12, noon	Constrn. number of miles of concrete walk.	J. K. Skipworth, Mayor.
New Jersey	Newark	Mar. 12, 3.30 p.m.	Constrn. cement sidewalks.	Essex County Park Comm.
South Jersey	South Orange	Mar. 12, 8 p.m.	Oiling 8 miles of streets.	W. H. Kemp, Chm. of Comm.
Louisiana	Shreveport	Mar. 14, 11 a.m.	Constrn. 25 miles of road, macadamizing or graveling.	J. T. Bullen, Parish Engr.; Clk. of Police Jury, Caddo Parish, Shreveport, La.
Ohio	Caldwell	Mar. 15	Improving road.	Town Council.
Ohio	Cincinnati	Mar. 15, noon	Improving roads.	County Comm.
Florida	Jacksonville	Mar. 15	Pavg. number of streets.	C. N. Ellis, Chm. Co. Comm.
Illinois	Moline	Mar. 15	Paving 2 streets; estimated cost, \$37,000.	M. R. Carlson, Pres. Bd. Local Imp.
New Jersey	Elizabeth	Mar. 15, 8.30 p.m.	Pavg. with brick, trap block and flagging several streets.	N. K. Thompson, St. Comm.
Wisconsin	Beloit	Mar. 15, 2 p.m.	Improving 3 streets.	J. L. Hendley, Chm. Bd. Pub. Wks.
Colorado	Colorado Spgs.	Mar. 15 (about)	Curb, parking, graveling and oiling road.	T. L. Wagener, City Engr.
Wisconsin	Two Rivers	Mar. 15	Constrn. 16,000 yds. tar macadam, 16,000 plain macadam cement curb and gutter.	Conrad Beatz, Chm. Bd. Pub. Wks.
Ohio	Wooster	Mar. 15	Constrn. 2¼ miles brick on concrete pavement.	Chas. Fahr, County Clk.
Minnesota	St. Peter	Mar. 16, 10 a.m.	Constrn. State road No. 1.	W. H. Holz, County Aud.
Pennsylvania	Salina	Mar. 16, 6 p.m.	Pavg. road with brick.	L. J. Tussey, Sec'y Supervrs.
Ohio	Mansfield	Mar. 18, noon	Grading road.	A. E. Courtney, County Aud.
Michigan	Lowell	Mar. 18, 7.30 p.m.	Pavg. with brick and asphalted concrete.	H. J. Taylor, Village Clk.; E. H. Christ, Engr., Grand Rapids.
Delaware	Wilmington	Mar. 19, noon	Constrn. about 6 miles stone roads.	F. A. Price, Highway Comm.
Missouri	Columbia	Mar. 19	Constrn. brick pavement.	J. R. Ellis, City Engr.
Ohio	Bowling Green	Mar. 19, 1 p.m.	Macadamizing 5 roads.	C. E. Stinebaugh, County Aud.
Ohio	Cleveland Hgts.	Mar. 19	Pavg. Superior street with brick, asphalt or macadam.	H. H. Canfield, Town Clk.
Pennsylvania	Oil City	Mar. 25	Pavg. with vitrified brick or bituminous concrete 21,000 sq. yds. also 14,000 ft. curbing.	R. MacKenzie, City Compt.
Ohio	Euclid	Mar. 25, noon	Improving Euclid road.	F. H. Shoaff, Village Clk.
Ohio	Toledo	Mar. 25, 10 a.m.	Repairing stone road.	C. S. Sanzenbacher, County Aud.
Wisconsin	Janesville	Mar. 26, 2 p.m.	Pavg. with brick 5,513 sq. yds.	J. C. Nichols, Chm. Comm.
Pennsylvania	Lisbon	Mar. 26	Constrn. concrete culverts.	County Comm.
Indiana	Mt. Vernon	Apr. 1	Constrn. 2 blocks paving.	J. L. Schultheis, City Clk.
Ohio	Alliance	Apr. 1 (about)	Constrn. brick pavement and grading.	J. F. Hogan, Clk. Dir. Pub. Serv.
Indiana	South Bend	Apr. 1, 11 a.m.	Constrn. macadamized road, 3 miles.	Clarence Sedgewick, County Aud.
California	Vallejo	Apr. 1	Constrn. 6,000 sq. ft. concrete and asph.; cost, \$150,000.	A. P. Noyes, City Engr.
Louisiana	Shreveport	Apr. 1	Furn. 60,000 tons hard rock or gravel.	J. T. Bullen, Parish Engineer.
Indiana	South Bend	Apr. 1	Impg. Edwardsburg road.	R. E. Keller, County Surveyor.
Ohio	Oberlin	Apr. 1	Constrn. 6,000 yds. brick pavement; cost, \$12,000.	H. T. Marsh, City Clk.
Ohio	Sandusky	Apr. 1	Constrn. 6½ miles roadway.	Cedar Point Resort Co.
West Virginia	Bethany	Apr. 1 (about)	Constrn. pavement; cost, \$25,000.	F. T. McCay, City Recorder.
Alabama	Montgomery	Apr. 1 (about)	Constrn. 4½ miles gravel road.	County Commissioner.
New Jersey	Long Branch	Apr. 3	Constrn. section of Ocean Highway; cost, \$20,000.	Freeholders.
Hawaii	Pearl Harbor	Apr. 6, 11 a.m.	Constrn. 22,575 sq. yds. oil macadam.	Commandant Naval Sta., Wash'gton.
Alabama	Talladega	Apr. 8	Constrn. 4½ miles gravel road.	W. S. Keller, State Highway Engr.
Minnesota	Winona	Apr. 9	Constrn. 21 miles macadam road.	Jos. Winczewski, County Aud.
Illinois	Ottawa	Apr. 30	Pavg. with brick on concrete; cost, \$300,000.	G. L. Farnsworth, City Engr.
Illinois	Rochelle	Apr. 30 (about)	Pavg. with brick on concrete base; cost, \$85,000.	W. B. M. Henry, Mayor; Aetna Eng. Bureau, Chicago.
Ohio	Akron	Apr. 25 (about)	Constrn. brick road.	J. C. Moore, County Aud.
<b>SEWERAGE</b>				
Massachusetts	Boston	Mar. 8, noon	Constrn. sewer.	L. K. Rourke, Comm. Pub. Wks.
Canada	Westmount, Que.	Mar. 11	Constrn. intercepting sewer on Western avenue.	Arch. Currie, City Surv.
Indiana	Portland	Mar. 11	Constrn. sewers; cost, \$7,900.	O. O. Clayton, City Engr.
California	Los Angeles	Mar. 11	Constrn. Hollywood main sewer.	H. B. Ferris, Sec'y Bd. Pub. Wks.
British Columb	Vernon	Mar. 11	Constrn. sewers; cost, \$200,000.	D. C. Tate, City Clk.
Indiana	Boonville	Mar. 12	Constrn. sewer; cost, \$65,000.	City Engineer.
Canada	Toronto, Ont.	Mar. 12, noon	Constrn. storm overflow sewer, Sec. 2.	G. R. Geary, Mayor.
Ohio	Cleveland	Mar. 12, noon	Constrn. sewers in a number of streets.	W. J. Springborn, Dir. Pub. Serv.
Iowa	Des Moines	Mar. 13	Constrn. sewer and septic tank.	Horace Sussong, City Clk.
New York	Rochester	Mar. 13, 11 a.m.	Constrn. div. No. 8 and part of No. 7 outlet into the lake, consisting of 9,300 ft. of 66-in. pipe.	X. F. Piper, Sec'y Bd. Contract.
Ohio	Niles	Mar. 14, noon	Constrn. sanitary sewer.	J. E. Tregaskis, Clk. Bd. Control.
Oregon	Portland	Mar. 15	Constrn. sewer systems, cost, \$85,000 and \$150,000.	P. M. Hurlburt, City Engr.
Minnesota	Willmar	Mar. 18	Constrn. 46,000 ft. sewers and disposal plant.	Hans Gunderson, City Clk.
Tennessee	Jellico	Mar. 19	Constrn. 4.8 miles 8 to 12-in. pipe sewers and accessories.	A. B. Mahan, Sec'y Sew'ge Comm.; W. J. Kirkpatrick, Jackson, Miss.



## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
New Jersey...	Beverly.....	Mar. 20, 9 p.m....	Constrn. 7 miles 8 to 15-in. clay pipe sewers & disposal wks..	Thos. Lea, Chm. Comm.
New York....	Hobart.....	Mar. 25.....	Constrn. sewers and disposal plant.....	W. J. H. Robinson, Village Clk.
Hawaii.....	Pearl Harbor....	Mar. 30, 11 a.m....	Constrn. sewer system Pearl Harbor.....	Navy Dept., Washington, D. C.
Texas.....	Clarksville.....	April 1 (about)....	Constrn. 8 miles sewers, cost \$25,000.....	J. R. Webb, City Clerk.
California....	Covina.....	May 1.....	Constrn. sewer system; cost, \$45,000.....	Town Clerk and F. G. Dessery, Eng., Los Angeles, Cal.
Illinois.....	Altamont.....	May 1.....	Constrn. sewer system.....	City Council.
<b>WATER SUPPLY</b>				
Massachusetts.	Boston.....	Mar. 8, noon.....	Installg. piping in pumping station.....	L. K. Rourke, Comm. Pub. Wks.
Massachusetts.	Everett.....	Mar. 8, 7.30 p.m....	Furn. 360 3/4-disc meters.....	Wm. Walker, Chm. Bd. Pub. Wks.
Br. Columbia.	Edmonds.....	Mar. 11.....	Furn. 35 miles 3 to 10-in. steel pipe; cost, \$300,000.....	W. Griffiths, City Clk.
Washington...	Rockford.....	Mar. 11, 7.30 p.m....	Furn. iron water mains and accessories.....	C. W. McDowell, City Clk.
Br. Columbia.	Burnaby.....	Mar. 11, 5 p.m....	Constrn. about 170,000 lin. ft. c. i. water main.....	W. Griffiths, Clk. Bd. Pub. Wks.
Minnesota....	St. Paul.....	Mar. 11, noon.....	Installg. 1,500,000-gal. pump.....	John Caulfield, Sec'y Water Comm.
New York....	West Point.....	Mar. 12.....	Extending distributing system.....	Maj. B. T. Clayton, Q. M.
Illinois.....	Chicago.....	Mar. 13.....	Furn. filters for schools.....	Board of Education.
Pennsylvania.	McKeesport.....	Mar. 14, 4 p.m....	Furn. c. i. water pipe and specials.....	C. E. Soles, City Compt.
Missouri.....	Mountain Grove.	Mar. 15.....	Constrn. water works; cost, \$20,000.....	W. S. Candler, Mayor.
Ohio.....	Steubenville.....	Mar. 10.....	Furn. 1 mile c. i. pipe.....	James Simpson, Supt. Water Bureau.
Ontario.....	Windsor.....	Mar. 19.....	Installg. pumping engine.....	T. W. Brooke, Chm. Water Comm.
Wisconsin....	Independence....	Mar. 15.....	Constrn. 1,200 ft. 8-in. c. i. pipe and driving 4 wells.....	Jacob Jackson, Vill. Clk.; W. E. Miller, Engr., Madison, Wis.
Canada.....	Moose Jaw, Sask.	Mar. 18.....	Constrn. reserv. centrif. pumps, elec. equip., steel pipes, etc..	E. B. Bonnell, City Clk.; W. J. Francis & Co., Engrs., Montreal, Can.
Missouri.....	Cape Girardeau..	Mar. 18, 5 p.m....	Constrn. water works.....	G. E. Chappell, City Clk.
Nebraska.....	Ainsworth.....	Mar. 20.....	Extending water works system; cost, \$21,000.....	City Clerk; Bruce & Standevin, Omaha, Neb.
Illinois.....	Chicago.....	Mar. 20, noon.....	Furn c. i. water pipe and specials.....	J. F. Neil, Sec'y So. Park Comm.
Ohio.....	Euclid.....	Mar. 25, noon.....	Constrn. water main.....	F. H. Shoaff, Clk.; Pearce Eng'g Co.
Pennsylvania.	Pittsburg.....	Apr. 1 (about)....	Constrn. reservoir & gate house; cost, \$1,000,000.....	Director Public Works.
Illinois.....	Fairbury.....	Apr. 17.....	Constrn. steel water tank.....	T. D. Karnes, City Clk.
Illinois.....	Altamont.....	May 1.....	Constrn. water works and furn. hydrants, valves, c. i. pipe, pumps, tower and tank.....	City Council.
<b>LIGHTING AND POWER</b>				
Minnesota....	Biwabik.....	Mar. 9.....	Installing ornamental lighting; 36 posts.....	J. E. Reilly, Village Clk.
Georgia.....	Atlanta.....	Mar. 11, 10 a.m....	Furn. report & plans for lighting & power for city.....	J. E. McClelland, Chm. Light. Com.
Kentucky.....	Falmouth.....	Mar. 11, 5 p.m....	Installg. electric lighting system.....	N. C. Ridgeway, Mayor; Anderson & Frankell, Engrs., Lexington.
Ohio.....	Cincinnati.....	Mar. 15, 3 p.m....	Installg. two engines and generators at Custom House.....	J. K. Taylor, Sup. Arch., Washington.
Arkansas....	Osceola.....	Mar. 15.....	Furn. machinery and constrn. lighting plant.....	C. L. Moore, Jr.
Missouri.....	Cape Girardeau..	Mar. 18, 5 p.m....	Furn. plans and specifications for lighting plant.....	C. E. Chappell, City Clk.
Canada.....	Calgary, Alta.	Mar. 20.....	Furn. 2,500-kw. turbo-generator, 1,000-kw. motor gen'tor, etc.	J. M. Miller, City Clk.
Canada.....	Winnipeg, Man..	Mar. 25.....	Furn. cables for fire and electric system.....	M. Peterson, Sec'y Bd. of Control.
Tennessee....	Memphis.....	Mar. 26.....	Equipping lighting plant.....	C. S. Smith, Major U. S. A.
Canada.....	Edmonton, Alta.	Mar. 31.....	Improving lighting plant; cost, \$200,000.....	J. C. Huffman, Supt. of Plant.
Georgia.....	Atlanta.....	Apr. 3, 10 a.m....	Furn. electric street lighting.....	R. C. Turner, City Elec.
<b>FIRE EQUIPMENT</b>				
Ohio.....	Ottawa.....	Mar. 9, noon.....	Furn. chemical wagon with two 25-gal. tanks.....	H. C. Herding, Village Clk.
Illinois.....	Chicago.....	Mar. 9, 10 a.m....	Furn. 35,000 ft. 1-in. rubber hose.....	J. F. Neil, Sec'y So. Pk. Comm.
Illinois.....	Chicago.....	Mar. 11, 8 p.m....	Furn. 40,000 ft. 2 1/2-in. fire hose double jacket, 5,000 ft. 3 1/2-in. double jacket, 5,000 ft. single jacket, 5,000 ft. 1-in. chemical hose.....	C. F. Seyferlich, Fire Marshall.
Alabama.....	Montgomery....	Mar. 12, noon.....	Furn. 2,000 ft. fire hose.....	Robt. Tait, Treas.
New York....	New York.....	Mar. 12, 10.30 a.m.	Constrn. 9 engine houses.....	Jos. Johnson, Fire Comm.
Minnesota....	Eveleth.....	Mar. 19.....	Installg. storage battery system.....	D. P. McIntyre, City Clk.
New York....	Port Chester....	Mar. 20 (about)....	Alterg. fire house; cost, \$4,000.....	T. J. Connolly, Clk.
New Jersey...	Atlantic City....	Mar. 20, noon.....	Erecting fire house.....	W. S. Cuthbert, Chm. Fire Com.
<b>BRIDGES</b>				
Indiana.....	Richmond.....	Mar. 9.....	Constrn. 5 reinforced concrete bridges.....	L. Bowman, County Aud.
Tennessee....	Elizabethton....	Mar. 11, noon.....	Furn. & constrn. iron or steel brdg. across Doe River, incl. piers	S. B. Wood, Chm. Bridge Com.
Ohio.....	Salem.....	Mar. 11.....	Constrn. steel bridge and approaches.....	H. C. McCamon, Pres. Co. Comm.
Tennessee....	Roan Mtn.....	Mar. 11.....	Constrn. bridge across Doe River.....	S. B. Wood, Chm. Bridge Comm.
Ohio.....	Delaware.....	Mar. 11, noon.....	Constrn. superstructure.....	W. H. Bodurtha, County Aud.
South Dakota.	Brookings.....	Mar. 12, 3 p.m....	Constrn. bridge repair work for year.....	O. J. Ottiness, County Aud.
Nebraska....	Loup City.....	Mar. 12.....	Constrn. bridges for 1912; one bridge to cost \$14,000.....	W. C. Dietrichs, County Clk.
Pennsylvania.	Norristown.....	Mar. 12, noon.....	Removg. old bridge and building new.....	R. C. Miller, County Clk.
Nebraska....	Lincoln.....	Mar. 12.....	Constrn. concrete bridges and culverts for year.....	H. E. Wells, Co. Clk.
Virginia.....	Bowling Green..	Mar. 13.....	Constrn. 160-ft. concrete bridge.....	P. St. J. Wilson.
Canada.....	Edmonton.....	Mar. 15.....	Furn. steel highway bridges during 1912.....	John Stocks, Dep. Min. Pub. Wks.
Kansas.....	Wichita.....	Mar. 18.....	Constrn. 8 culverts and 5 bridges.....	County Commissioners.
Illinois.....	Virginia City....	Mar. 19, 1 p.m....	Constrn. reinforced concrete bridge.....	L. O. Skiles, Town Clk.
Illinois.....	Waukegan.....	Mar. 20.....	Constrn. conc. highway bridge, 490 ft. long; cost, \$74,000.....	J. I. Dietmeyer, Comm. Pub. Wks.
Florida.....	Jacksonville....	Mar. 29.....	Constrn. 1 concrete and 2 wooden bridges.....	C. W. Ellis, Chm. County Comm.
Ohio.....	Steubenville.....	Mar. 26.....	Constrn. concrete bridge; cost, \$1,000.....	E. C. Ginger, County Surv.
California....	Pasadena.....	Mar. 26.....	Constrn. concrete bridge, 1,460 ft. long.....	Herman Dyer, City Clk.; Waddell & Harrington, Kansas City, Mo.
Indiana.....	Bluffton.....	Apr. 1 (about)....	Constrn. 8 concrete bridges and box culvert.....	L. A. Williamson, County Aud.
Minnesota....	Winona.....	Apr. 9.....	Constrn. 80-ft. steel truss bridge.....	County Auditor.
Illinois.....	Maywood.....	Apr. 15 (about)....	Constrn. concrete bridge; cost, \$35,000.....	Westcott & Ronneberg, Engrs., Chicago.
<b>MISCELLANEOUS</b>				
Massachusetts.	Everett.....	Mar. 8, 7.30 p.m....	Furn. cement curb stone and granite paving blocks.....	Wm. Walker, Chm. Bd. Pub. Wks.
New York....	New York.....	Mar. 11, 2.30 p.m.	Constrn. home-rendering and grinding plant.....	M. J. Drummond, Comm. Charities.
Indiana.....	Woodruff Place..	Mar. 11, 8 p.m....	Removg. ashes and garbage.....	C. E. Swain, Town Clk.
Texas.....	Vernon.....	Mar. 12.....	Bldg. brick jail.....	J. A. Nachers, County Judge.
New York....	New York.....	Mar. 14, 3 p.m....	Constrn. boiler house for Metropolitan Museum.....	C. B. Stovers, Pres. Park Bd.
Ohio.....	Cleveland.....	Mar. 14, noon.....	Furn. two light delivery automobiles.....	W. J. Springborn, Dir. Pub. Serv.
Pennsylvania.	Huntington.....	Mar. 15.....	Furn. 2,000 chestnut poles for transmission line.....	Raystown Water Power Co.
Kentucky.....	Manchester.....	Apr. 1.....	Constrn. jail.....	T. J. Rawlings, Chrmn.

## STREET IMPROVEMENTS

**Courtland, Ala.**—Lawrence County has called election for March 18 to determine whether county shall issue \$123,000 worth of bonds for purpose of building turnpikes.

**Montgomery, Ala.**—State Highway Department has announced that steps will shortly be taken for graveling road between this city and Wetumpka.

**Hillsboro, Cal.**—In order to have specifications available for widespread boulevard campaign, members of Board of Trustees are going forward with plans for road construction on assumption that

issue of \$115,000 bonds to be voted on March 16, will carry.

**Los Angeles, Cal.**—Board of Public Works has decided to ask for appropriation of \$6,000 for improving of Weston st. by oiled macadam.

**Pomona, Cal.**—Improvement of roads is being discussed; it is proposed to build 7 miles of roads and arteries leading into city, at estimate of \$15,000 per mile.

**San Francisco, Cal.**—Designs and measurements for Stockton st. tunnel, from Sutter to Sacramento sts., have been submitted by City Engineer to Tunnels Committee of Supervisors, with estimate of cost of bore, approaches and such ap-

purtenances as Supreme Court in its recent decision said were essential. Cost was estimated as follows: Excavation and construction, \$323,668; north approach, including reconstruction of streets and sidewalks, \$9,542; south approach, \$21,451; reconstructing sewers, \$4,702; replacing high pressure pipe, \$2,860; total, \$362,223. City Engineer added 20 per cent. for contingencies, contractor's profit and engineering, this addition of \$72,444 making \$434,667 in all.

**San Francisco, Cal.**—The Divisadero Street Improvement Association will submit to Board of Supervisors plan for tunnel under Divisadero street, between

Sacramento and Greenwich streets, which has been prepared by Engineers Russell L. Dunn and Colonel William C. Alberger.

**Santa Monica, Cal.**—Nearly 4,000 ft. of frontage is represented on petition to pave Oregon ave., from Sawtelle to sea and convert it into scenic boulevard.

**Denver, Col.**—Board of Public Works has received petition for paving District No. 1 in North Denver. Paving is to be asphalt, with 5-in. concrete base, and shall not exceed \$3.40 per front ft.

**Cheshire, Conn.**—At town meeting it was voted to appropriate \$5,000 for improvements to highways. Added to this amount State will give \$15,000, making total of \$20,000 that will be available for these improvements. It is understood

that bulk of this will be used to macadamize road between Mount Carmel and Milldale.

**New Britain, Conn.**—By Board of Public Works, for permanent paving to be laid in Arch st., from Vega Hall to Kensington st. Bids were as follows: Connecticut Hassam Paving Co., New Haven, vitrified Clearfield brick, \$2.54 a sq. yd.; Mack brick, \$2.54 sq. yd.; wood block, \$3.49 sq. yd.; granite block, \$3.47 sq. yd., including the excavation and complete paving. Warren Bros., Boston, Mass., for section of street, not including area between trolley tracks and two feet outside on each side, which is, they understand, to be let by separate contract by Connecticut company for bitulithic paving

with 5-in. concrete base and 2-in. top of bitumen, \$2.42 a sq. yd. overhaul for excavation, 1c. a cu. yd. for each 100 ft. in excess of 2,500 ft., a five-year guarantee bond to be furnished by surety company. Field, Barker & Underwood, Philadelphia, vitrified Mack brick, \$2.65 a sq. yd.; wood block, 3½ in. thick, \$3.60; granite block, \$3.40. Southern New England Paving Co., of Hartford, asphalt with 5-in. concrete base, 1½-in. binder and 1½-in. top of Bermuda asphalt, the same standard as in Hartford, with five-year guarantee, \$2.35 a sq. yd., excavating included. Pierson Engineering & Construction Co., of Bristol, vitrified Mack brick, \$2.73 a sq. yd.; Porter brick, \$2.70 a sq. yd.; Bessemer, \$2.72 a sq. yd.; Clearfield, \$2.60; Metro-

### BIDS RECEIVED

TABLE No. 1.—SUMMARY OF BIDS FOR PAVING DISTRICT No. 17.  
Opened at Boise City, Idaho, Feb. 2, 1912, by the Board of Public Works.

Bidders.	Seepage catchbasins, 300, each.	Gutter plates, 380, 412 lbs.	Sidewalks, 775 lin. feet.	Curb, 11,826 lin. feet.	Concrete curb gutters; guaranty—		Street car pavement; base—		Excavation, 80,480 cu. yards.
					Without, 70,356 sq. yards.	5-year, 70,356 sq. yards.	Without, 17,910 sq. yards.	With concrete, 17,910 sq. yards.	
A—Story & Murphy, Boise, Idaho		\$0.04¼	\$0.72	\$0.40	\$1.30	\$1.35	\$3.67	\$4.87	\$1.00
B—C. P. Madsen, Boise, Idaho	\$50.00	.03	.70	.45				4.25	.75
C—Bidwell, Hayden & Co., Portland, Ore.	78.00	.04	.70	.45			3.25	4.35	.85
D—Consolidated Construction Co., Salt Lake City	50.00	.04½	.78	.65	1.08	1.13	2.46	3.75	.70
E—Inland Hassam Paving Co., Portland, Ore.	49.00	.04	.65	.36	.90	.91	2.90	3.75	.65
F—Strange & Maguire, Salt Lake City	47.00	.03¾	.65	.40	1.25	1.42	3.25	3.95	.80
G—Cleveland Trinidad Paving Co., Cleveland, O.	35.00	.04½	.65	.43	.95	1.00	2.65	3.40	.50
H—Rackliff, Gibson Const'n Co., St. Joseph, Mo.	45.00	.04	.70	.45	.99	1.00	2.90	3.65	.60
I—S. Birch & Sons, Fargo, N. Dak.	80.00	.04	1.00	.50			3.00	4.50	.75
J—Warren Construction Co., Portland, Ore.	41.50	.03¾	.60	.35	.99	1.01	3.25	3.80	.60
K—Gillis Construction Co., Salt Lake City	70.00	.04½	1.00	.45			4.25	5.00	.90
L—James Green, & Co., Chicago, Ill.	74.00	.04½	.74	.45	1.25	1.30	3.90	4.60	.77
M—Giebisch, Joplin Co., Portland, Ore.	60.00	.03½	.70	.36	1.36	1.40	2.85	3.40	.50
N—Kasal Construction Co., Tacoma, Wash.	40.00	.06	.60	.30	.99	1.09		3.89	.55
O—Slick Bros. Construction Co., Boise, Idaho	75.00	.04	.67	.40			3.58	4.73	1.00
P—R. S. Blome & Co., Chicago, Ill.	60.00	.05	.60	.40			3.14	4.21	.65
Q—Barber Asphalt Paving Co., Seattle, Wash.	35.00	.04	.60	.35	1.00	1.02	2.90	3.75	.55
R—Oregon Ind. Paving Co., Portland, Ore.	40.00	.03	.66	.33	1.30	1.35	2.66	3.00	.60
S—G. A. Heman, St. Louis, Mo.	20.00	.04	.60	.35	.98	1.00	2.75	3.25	.34
T—P. J. McHugh, Seattle, Wash.	40.00	.03½	.68	.35	1.00	1.00	3.20	4.00	.60
U—Western Paving Co., Oklahoma City, Okla.	47.50	.02¾	.70	.35	1.15	1.20	1.55	3.20	.67½

TABLE No. 2.

Items.	Quantities.	Bidders; see key in Table 1.											
		D.	F.	G.	H.	L.	M.	N.	O.	R.	S.	T.	U.
<i>Asphalt:</i>													
Without guaranty .....	240,643 sq. yds.	\$2.00	\$1.55	\$1.49	\$1.39½	\$1.76	\$1.70	\$1.59	\$1.38	\$1.49	\$1.47	\$1.38	\$1.53
With 5-year guaranty .....	240,643 " "	2.25	1.65	1.54	1.43	1.91	1.75	1.69	1.46	1.50	1.49	1.40	1.58
<i>Asphaltic concrete:</i>													
Pavement, stone base, without guaranty...	240,643 " "	1.60	.....	1.26	.....	.....	.....	.....	.....	.....	1.37	.98	.....
With stone base with 5-year guaranty.....	240,643 " "	2.25	.....	1.31	.....	.....	.....	.....	.....	.....	1.47	1.00	.....
With concrete base, without guaranty.....	240,643 " "	2.00	.....	1.42	.....	.....	.....	.....	.....	.....	1.54	1.30	1.45
With concrete base with 5-year guaranty...	240,643 " "	2.25	.....	1.47	.....	.....	.....	.....	.....	.....	1.64	1.30	1.50
<i>Bitulithic:</i>													
4-in. stone base, 2-in. top, without guaranty	240,643 " "	.....	1.90	1.26	.....	.....	.....	.....	1.71	.....	.....	.....	.....
4-in. stone base, 2-in. top, 5-year guaranty..	240,643 " "	.....	2.00	1.31	.....	.....	.....	.....	1.76	.....	.....	.....	.....
4-in. conc. base, 2-in. top, without guaranty	240,643 " "	.....	2.10	1.42	.....	.....	.....	.....	1.90	.....	.....	.....	.....
4-in. conc. base, 2-in. top, 5-year guaranty..	240,643 " "	.....	2.20	1.47	.....	.....	.....	.....	1.95	.....	.....	.....	.....
3½-in. stone base, 1½-in. top, without guar.	240,643 " "	.....	1.65	1.11	.....	.....	.....	.....	1.49½	.....	.....	.....	.....
3½-in. stone base, 1½-in. top, 5-year guar.	240,643 " "	.....	1.75	1.16	.....	.....	.....	.....	1.54½	.....	.....	.....	.....
3½-in. conc. base, 1½-in. top, without guar.	240,643 " "	.....	1.81	1.27	.....	.....	.....	.....	1.64	.....	.....	.....	.....
3½-in. conc. base, 1½-in. top, 5-year guar..	249,643 " "	.....	1.91	1.32	.....	.....	.....	.....	1.69	.....	.....	.....	.....
<i>Concrete:</i>													
Without guaranty .....	310,998 " "	.99	1.03	.....	.....	1.14	1.04	.95	1.00	.....	.98	.....	1.15
With 5-year guaranty .....	310,998 " "	1.04	1.20	.....	.....	1.19	1.10	.....	1.10	.....	1.00	.....	1.20
<i>Concrete, cement top:</i>													
With cement top, without guaranty .....	310,998 " "	1.28	.....	.....	.....	1.29	1.22	1.14	.....	.....	1.10	.....	.....
With cement top, with 5-year guaranty.....	310,998 " "	1.33	.....	.....	.....	1.34	1.28	1.30	.....	.....	1.15	.....	.....
<i>Granocrete:</i>													
Without guaranty .....	310,998 " "	.....	.....	.....	.....	.....	1.40	.....	.....	.....	.....	.....	.....
With 5-year guaranty .....	310,998 " "	.....	.....	.....	.....	.....	1.48	.....	.....	.....	.....	.....	.....
<i>Vitrified brick:</i>													
Without guaranty .....	310,998 " "	2.95	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
With 5-year guaranty.....	310,998 " "	3.25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE No. 3.

		Bidders; see key in Table No. 1.								
		A.	B.	C.	E.	I.	J.	K.	O.	P.
<i>Bitulithic:</i>										
4-in. stone base, 2-in. top, without guaranty	240,643 sq. yds.	.....	.....	.....	.....	.....	\$1.80	.....	.....	.....
4-in. stone base, 2-in. top, 5-year guaranty	240,643	.....	.....	.....	.....	.....	1.85	.....	.....	.....
4-in. concrete base, 2-in. top, without guaranty	240,643	.....	.....	.....	.....	.....	1.97	.....	.....	.....
4-in. concrete base, 2-in. top, 5-year guaranty	240,643	.....	.....	.....	.....	.....	2.01	.....	.....	.....
3½-in. stone base, 1½-in. top, without guaranty	240,643	.....	.....	.....	.....	.....	1.53	.....	.....	.....
3½-in. stone base, 1½-in. top, 5-year guaranty	240,643	.....	.....	.....	.....	.....	1.58	.....	.....	.....
3½-in. concrete base, 1½-in. top, without guar.	240,643	.....	.....	.....	.....	.....	1.67	.....	.....	.....
3½-in. concrete base, 1½-in. top, 5-year guaranty	240,643	.....	.....	.....	.....	.....	1.72	.....	.....	.....
<i>Dolarway:</i>										
Without guaranty	240,643	.....	.....	.....	.....	.....	.....	.....	.....	.....
With 5-year guaranty	240,643	.....	.....	.....	.....	.....	.....	.....	.....	.....
<i>Hassamite:</i>										
5-in. concrete base, without guaranty	240,643	.....	.....	.....	\$1.00	.....	.....	.....	.....	.....
5-in. concrete base, with 5-year guaranty	240,643	.....	.....	.....	1.05	.....	.....	.....	.....	.....
5-in. Hassam base, without guaranty	240,643	.....	.....	.....	1.32	.....	.....	.....	.....	.....
5-in. Hassam base, with 5-year guaranty	240,643	.....	.....	.....	1.32½	.....	.....	.....	.....	.....
<i>Concrete:</i>										
Without guaranty	310,998	.....	.....	.....	1.02	\$1.26	.....	\$0.95	\$1.15	.....
With 5-year guaranty	310,998	.....	.....	.....	1.14	1.31	.....	1.10	1.27½	.....
<i>Concrete, cement top:</i>										
With cement top, without guaranty	310,998	.....	.....	.....	1.21	.....	.....	1.10	1.30	.....
With cement top with 5-year guaranty	310,998	.....	.....	.....	1.29	.....	.....	1.25	1.45	.....
<i>Granocrete:</i>										
Without guaranty	310,998	.....	.....	.....	.....	.....	.....	.....	.....	\$1.69
With 5-year guaranty	310,998	.....	.....	.....	.....	.....	.....	.....	.....	1.69
<i>Hassam:</i>										
6-in. thick, no guaranty	310,998	.....	.....	.....	.....	.....	.....	.....	.....	.....
6-in. thick, 5-year guaranty	310,988	.....	.....	.....	1.70½	.....	.....	.....	.....	.....
5-in. thick, no guaranty	310,999	.....	.....	.....	1.51	.....	.....	.....	.....	.....
5-in. thick, 5-year guaranty	310,998	.....	.....	.....	1.51½	.....	.....	.....	.....	.....



politan, \$2.80; Deckman Medal brick, \$2.75; Shawmut brick, \$2.78; wood block, long leaf yellow pine, \$3.30; North Carolina yellow pine, \$3.10; granite block, \$2.85; asphalt, \$2.65.

**Waterbury, Conn.**—Widening of Meadow st. to 60 ft. has been authorized.

**Waterville, Conn.**—Petition will probably be circulated for improving of important streets.

**Washington, D. C.**—Bill has been passed authorizing extension of Lamont st. northwest.

**Washington, D. C.**—Appropriation of \$5,000 for grading and improvement of Minnesota ave. southeast from Good Hope rd. to 18th st. is proposed in bill before Senate introduced by Senator Oliver, member of Senate District Committee.

**Like Oak, Fla.**—It has been decided to pave principal streets of city with brick. Bonds in sum of \$25,000 will be advertised and sold.

**Jacksonville, Fla.**—For concrete foundation on which to lay asphalt paving on Riverside ave., between Margaret and Stockton sts., as follows: Engineering & Paving Co., 95c. per sq. yd.; Mattair & Young, \$1.29 per sq. yd.; Daniel, Lyst & Douglass, \$1.05 per sq. yd.

**Atlanta, Ga.**—Petition for new grade on Houston st., between Piedmont ave. to Hilliard st., is being circulated.

**Wingham, Ga.**—Citizens have voted \$12,000 in bonds by good majority, \$2,000 for street improvements, \$7,000 for electric lights and \$2,000 for additional improvements.

**Chicago, Ill.**—Extensive program of street paving, to include resurfacing of many other thoroughfares, has been mapped out by Board of Local Improvements.

**Indianapolis, Ind.**—Resolutions have been approved for improving various streets.

**Indianapolis, Ind.**—Resolutions have been adopted for improvement of Gray, 30th, Concord and Northern sts.

**Marion, Ind.**—Resolutions have been adopted for improvement of various streets.

**Marion, Ind.**—Gravel road bonds for construction of Dayton Clark rd. of Jefferson Township have been purchased by Benjamin Robb and Jerome Shaffer. Clyde R. Partridge rd. of Fairmount and John L. Thompson rd. of Mills disposed of bonds to Charles Reed, J. F. Knot and another gentleman, all Grant County men.

**Michigan City, Ind.**—Engineer H. M. Miles has submitted plans and specifications for pavement in Hermitage ave., between east line of the park and west line of Shawmut Park. Resolution declaring public necessity to exist for improvement was passed.

**Muncie, Ind.**—Board of Public Works has confirmed following resolutions, and ordered bids advertised: Construction of paved roadway and cement curb and gutter wherever needed in Jackson st., from High to Kilgore ave.; in Seymour st., from Mulberry to Elm; in Elm st., from Charles to within two ft. of the north rail of Big Four tracks. Construction of combined cement curb and gutter in Seventh st., from Walnut to Madison.

**South Bend, Ind.**—Resolutions have been confirmed for paving of East Madison st. to Hydraulic ave., South Fellows st. and North Scott st.

**Harlan, Ia.**—City Council has passed resolution ordering construction of nearly 30 blocks of new paving, which will probably be laid in early spring.

**Sioux City, Ia.**—Resurfacing and repairing of paving on Third st., from Jones st. to Pearl st., has been authorized.

**Lexington, Ky.**—Mayor J. E. Cassidy has sold at public auction several issues of street improvement bonds. They were disposed of as follows: Park ave., \$2,188.11; College View ave., \$1,935.58, and Kentucky ave., \$1,693, to Central Construction Co., and Forest ave., \$3,803.82; North Broadway, \$24,527.25, and West 3d st., \$2,317.81, to Carey & Reed Co.

**Lexington, Ky.**—Joint Improvement Committee of General Council has authorized sale of three-year street improvement bonds in payment for Oldham and Bryan aves., which have been recently reconstructed with macadam.

**Alexandria, La.**—Town of Pineville, in this parish, has sold issue of \$9,000 of 40 years, 5 per cent. street improvement bonds, to new First National Bank of Columbus, Ohio.

**Holyoke, Mass.**—Petition has been received asking for paving of Main st.

**Lowell, Mass.**—Petition of Mayor James L. O'Donnell and Board of Aldermen asking for legislation to provide for State highway through towns of Methuen and Dracut has been filed in State House by Representative Butler.

**Duluth, Minn.**—Board of Public Works has been directed to proceed with improvement of Fifth alley, between 23d and 24th aves. west; estimated cost, \$2,654.30.

**Monroe, Mich.**—Voters have decided to bond city for \$25,000 for paving purposes.

**Grand Rapids, Mich.**—Board of Public Works has been requested to furnish estimate of cost of grading and paving S. Division alley.

**Kalamazoo, Mich.**—By action of City Council City Engineer H. A. Johnston is instructed to prepare specifications for machine-mixed asphaltic concrete pavement.

**Monroe, Mich.**—At special election question of issuing \$25,000 in bonds for paving purposes was carried by a vote of 435 to 76.

**St. Joseph, Mich.**—Thirteen miles of good roads will be built in Berrien County within next few months at cost of \$50,000. Plans for extending system of improved highways have been decided upon by County Road Commissioners and bids will be advertised for within short time. Macadam will be used in improvements of all roads, excepting two miles, one out of Niles and another out of Buchanan, which will be built with gravel. County Surveyor W. J. Cleary is completing specifications for new roads.

**Deerwood, Minn.**—Village Council has gone on record as favoring issuance of \$10,000 bonds for street, sidewalk and other improvements in Deerwood, and question will be brought before people at village election March 12.

**West Duluth, Minn.**—City Engineering Department is making estimate on cost of paving Oneota, Jenswold and Superior sts., from 25th ave. west to 46th ave. west.

**Atlantic City, N. J.**—Paving of Baltic ave. is being discussed; estimated cost, \$80,000.

**McGraw, N. Y.**—Taxpayers are contemplating paving main street of village. Brick is the unanimous choice as the material to be used. Citizens plans to use brick from one hotel and the other about wards and possibly some other material at either extremity to connect with State road.

**Niagara Falls, N. Y.**—Board has prepared recommendations for public improvements and directed Clerk to submit same to Common Council as follows: Pavement on 13th st., estimated maximum cost: Granite or wood block, \$7,200; asphalt block, \$6,550; brick, sheet asphalt or bitulithic, \$6,075; Hassam, \$5,325. Pavement on Fairfield ave., estimated maximum cost: Granite or wood block, \$13,000; asphalt block, \$11,775; asphalt, brick or bitulithic, \$10,900; Hassam, \$9,500.

**Walden, N. Y.**—Election will be held March 19 for voting on purchase of stone crushing outfit for improvement, repair and maintenance of streets; estimated cost, \$1,500.

**Atlantic City, N. J.**—Street Committee of City Council will report favorably on specifications providing for repaving of number of avenues with different kinds of paving material.

**Atlantic City, N. J.**—Petition is being circulated among property owners and tenants on Melrose (Mediterranean) ave., between New Hampshire and New Jersey aves., demanding of Council that steps be taken to properly pave street, which is now in bad condition.

**Elizabeth, N. J.**—Extensive county road improvements have been authorized by Board of Freeholders, as follows: South ave., Plainfield, paved for width of 19 ft. with amiesite or similar material, \$20,750; Newark ave., Elizabeth, paved with asphalt blocks on present telford base; bitulithic pavement on present base, or with specification granite blocks on concrete base, from \$35,200 to \$58,075, according to pavement adopted; Westfield ave., Elizabeth, paved with amiesite or similar material for width of 16 ft., \$15,000; Rahway ave., Elizabeth, paved with asphalt blocks for block adjoining Court House, full width between curbs; asphalt blocks or bitulithic pavement 20 ft. wide, Union to Cherry sts., and amiesite or similar material, 20 ft. wide, from Cherry st. to city line, \$25,787. Total estimated cost of four streets is therefore from \$97,717 to \$119,592, depending on material used.

**Newark, N. J.**—Resolution has been

adopted for opening of Telford st. and Longford st.

**Newark, N. J.**—By Board of Street and Water Commissioners, for paving as follows: Badger ave., from Hawthorne ave. to Meeker ave., with brick; O'Gara & McGuire, Shawmut brick, \$11,381; Newark Paving Co., Kushequa, \$12,181; McAvoy, \$11,033; McMahon Construction Co., Clearfield shale, \$10,503; Corning, \$11,191; Van Keuron & Son, Jamestown, \$11,788; Jannarone Bros., Shawmut block, \$12,926; McAvoy \$13,110; Metropolitan, \$13,339; Jersey Paving Corp., Metropolitan, \$11,592; Bessemer, \$11,592. Custer ave., from Elizabeth ave. to Bergen st., with bitulithic; Standard Bitulithic Co., \$5,341; J. F. Shanley Co., \$5,267. Shepard ave., from Mapes ave. to Bergen st.; J. F. Shanley Co., \$10,976; Standard Bitulithic Co., \$10,892. Clinton place, from Clinton ave. to Renner ave.; Standard Bitulithic Co., \$24,570. Vermont ave., from South Orange ave. to Plymouth st., with bitulithic; J. F. Shanley Co., \$7,365; Standard Bitulithic Co., \$7,285. Columbia ave., from South Orange ave. to Plymouth st., with bitulithic; Standard Bitulithic Co., \$8,465; J. F. Shanley Co., \$8,545. Rose terrace, from Chadwick ave. to South 10th st., with brick; Jersey Paving Corp., Metropolitan, \$18,335; Newark Paving Co., McAvoy, \$16,552; Mushequa, \$18,252; McMahon Construction Co., Clearfield shale, \$16,960; Corning, \$17,640; Van Kueren & Son, Jamestown, \$17,307; P. & P. Jannarone, Shawmut, \$19,383; McAvoy, \$19,655; Metropolitan, \$19,995; O'Gara & McGuire, Shawmut, \$17,265. Jefferson st., from Chestnut st. to South st., with granite; O'Gara & McGuire, \$12,729; Newark Paving Co., \$12,726; P. & P. Jannarone, \$12,696 (low); Bamberger & Chapman, \$13,323; J. F. Shanley, \$12,824; Jersey Paving Corp., \$13,380; Van Keuren & Son, \$13,050.

**Newark, N. J.**—Action has been taken for paving, under Jersey City act, of following named streets, in addition to those already placed on the schedule for this year: With Bitulithic—Calumet st., from Pacific to Jefferson; Beverley st., from Leslie to the city line; Columbia ave., from South Orange ave. to a point 200 ft. south of Plymouth st.; Vermont ave., from South Orange ave. to a point 135 ft. south of Laurel pl.; Lincoln ave., from Irving st. to Verona ave.; Scheerer ave., from Renner ave. to Bergen st.; Montclair ave., from Summer to Mt. Prospect ave. With Granite—Van Buren st., from South to Clifford; Ogden st., from Clay to Bridge. With Brick—14th ave., from South 11th to city line.

**Brooklyn, N. Y.**—Borough President Connolly has called meetings of local boards of borough to consider petitions which have recently been prepared for improvement of highways in borough, cost of which is to be paid out of fund of \$800,000 appropriated by Board of Estimate in August, 1911.

**Canastota, N. Y.**—At adjourned meeting of Village Board, Engineer H. F. Hamel submitted plans, specifications and estimates for proposed brick pavement in North Main st. Plans were accepted and approved. According to engineer's estimate, Main st. pavement if voted for, will cost about \$27,000.

**Lockport, N. Y.**—Council has approved action of State Highway Commission authorizing improvement of South Transit st., from West ave. to Lincoln ave., with brick pavement. Plans provide for 40-ft. pavement from West ave. to Transit st. bridge, 30 ft. from bridge to High st., and 24 ft. from High to Lincoln ave.

**Lowville, N. Y.**—Meeting of abutting property owners on State st. has been held to determine sentiment of people in regard to paving street on either side of State road to be constructed through village. Vote was taken to obtain sentiment of those present, and it was carried unanimously in favor of paving. Total cost to village would be about \$30,000.

**Mohawk, N. Y.**—At special election village has voted, 132 to 11, to appropriate \$14,000 for paving Main st. Total cost of paving will be \$78,000, of which State will pay \$42,600, property owners, \$24,132. Village will have to pay but little more than \$11,000 as its share, but Village Board decided to call for bond issue of \$14,000 to cover all additional expenses, as well as that of paving.

**Mt. Vernon, N. Y.**—Alderman Van Tassel offered resolution providing that proposed change of grade on South Fulton, Eighth and Columbus aves., be advertised.

**North Tonawanda, N. Y.**—Contract will be awarded on March 12 for construction of Martinsville-Berkholtz section of

Buffalo and Niagara Falls blvd. Effort will be made to have improved road completed this year.

**Rochester, N. Y.**—Bids will shortly be advertised for by Board of Contract & Supply for contract for sprinkling 700 streets during summer months. Estimate this year is about \$88,000, which is increase over last year's estimate.

**Rochester, N. Y.**—Common Council will consider improvements to various streets.

**Rome, N. Y.**—Board of Public Works has received estimate of cost for improving East and West Dominick st. according to plans approved by State Department. Amount is \$21,200.

**Syracuse, N. Y.**—State Highway Commission has promised to build three stretches of road in Onondaga County.

**Yonkers, N. Y.**—City Engineer Cooper will draft plans for laying out and opening Park ave. from Greenville ave. to Roberts ave.; Adams pl. from Chase ave. to Morsemere pl.; Wilson pl. from Chase ave. to Morsemere pl.; Morsemere pl. from Palisade ave. to Greenville ave., and Chase ave. from Palisade ave. to Hillside ave.

**Akron, O.**—Paving of Furnace st. has been authorized.

**Cincinnati, O.**—Widening of corner of 6th ave. and Baymiller st. is being considered.

**Cincinnati, O.**—Committee of Ways and Means recommends sale of bonds authorized in following ordinances: \$4,000 for land for the extension of Demaway and Westwood aves. and a street from Mount Vernon st. to Isabella st.; \$2,500 for extension of Arbor ave. to Millsbrae ave.

**Cincinnati, O.**—Lowest bidder for improvement of Cornell ave., from Lebanon pike to Montgomery rd., was J. T. Rodabaugh, or J. N. Jordon; estimated cost, \$19,442.

**Columbus, O.**—For paving number of streets as follows: 13th ave., G. W. Patterson & Son, \$12,095; Geigle, Barnes & Coe, \$13,098; S. T. Knight, \$13,132.50; D. E. Sullivan & Son, \$13,363; H. E. Barthman, \$12,891; A. G. Pugh, \$13,935. Canal st., from Rich st. to Livingston ave.; H. J. Shaw, \$9,969; S. T. Knight, \$10,029; Harris & Trimble, \$10,725; Geigle, Barnes & Coe, \$10,275; H. E. Barthman, \$10,414; A. G. Pugh, \$10,606. 12th ave.; G. W. Patterson & Son, \$13,168; S. T. Knight, \$14,033; D. E. Sullivan & Son, \$15,149; Geigle, Barnes & Coe, \$14,181; H. E. Barthman, \$13,994; A. G. Pugh & Co., \$15,718.

**Dayton, O.**—Councilman Happel will introduce resolutions in Council for grading and paving with boulders of first alley west of Troy st., from Kiefer st. to first alley north of Hart st., and for construction of cement walks, curbing, guttering and graveling and regrading of roadway of Lukaszewitz st., from Valley st. to Warner ave.

**Dayton, O.**—Councilman Geisler will introduce ordinance at meeting of City Council for extension of Anderson st., from Wayne ave. to Gunckel ave.

**Dayton, O.**—Bids will be received until 12 noon, March 5, by City Auditor, for purchase of \$8,000 bonds for repair of macadam on Linden and Central aves; \$11,500 for paving Herman ave.; \$11,000 for paving Summit st.; \$22,500 for paving Troy St.; \$4,400 for opening and extension of Coate ave.; \$5,700 for paving street intersections on Clover st.; also \$8,200 for widening of third alley south of Fifth st. G. W. Bish, City Auditor.

**Dayton, O.**—Street Superintendent R. J. Paul will meet with Finance Committee of City Council and present estimate of \$35,000 as amount that would be needed during next year for asphalt street paving. He asked that this amount be set apart for paving, exclusive of other improvements that will have to be made on streets of city during year.

**Euclid, O.**—Bids will be received until 12 noon, March 25, by Fred H. Shoaff, Clerk of Village, for purchase of \$20,602 worth of bonds for improving Euclid rd. by constructing 10-in. water main.

**Massillon, O.**—Council has received from City Engineer Yost estimates of cost of repaving Main st., between Mill and Clay, and Erie st., between Main and Tremont, and paving West Tremont st. and South Erie st., from end of present paving to city limits. Plans and profiles have been adopted and later resolutions, determining to proceed with paving were passed.

**Niles, O.**—Board of Control will advertise for bids on grading, curbing and paving of Vienna st., from Robbins ave. to Davis St.

**Sandusky, O.**—Trustees of Groton Township called meeting to consider proposition to bond township to extent of \$25,000 for road improvement purposes. If project is approved by Trustees special election will be called for

forepart of April. Trustees of Oxford and several other townships are considering similar moves.

**Altoona, Pa.**—Resurfacing of Seventh ave. is being urged; estimated cost, \$35,000 to \$40,000.

**Dunmore, Pa.**—Ordinance has been passed providing for new issue of \$45,000, to be used in contemplated paving of West Drinker st., Electric ave., Adams ave., Marion st. and South Blakely st.

**Erie, Pa.**—Ordinance has passed third reading for paving of 26th st.

**Erie, Pa.**—At special meeting of Board of Directors of Chamber of Commerce plans for improvement of lower State st. were discussed. City Engineer B. E. Briggs presented plans which call for 74-ft. roadway and sidewalk, retaining banks extending to concrete boat landing founded on cribs which cover width of 100 ft.

**Johnstown, Pa.**—Purchase of street flusher and quantity of hose will probably be considered for Street Department.

**Mercer, Pa.**—County Commissioners will give \$15,000 to help defray cost of completing Sharon-Mercer rd. with bituminous macadam.

**Pittsburgh, Pa.**—Bids received for improving Lambert st. exceeded estimated cost, and contract has not been let.

**Seranton, Pa.**—Council has passed ordinance providing for paving of Poplar st., from Capouse ave. to Delaware & Hudson Railroad; also ordinances have been passed for paving of various other streets.

**Williamsport, Pa.**—Highway Committee of Councils will recommend paving of Hepburn st., from W. Third st. to Fifth st.

**York, Pa.**—Ordinance is being discussed providing for opening of South Hartley st., from College ave. to Codorus Creek.

**Woonsocket, R. I.**—Petition has been presented asking that Summit st. be extended to Orchard st.

**Knoxville, Tenn.**—Citizens are discussing improvement of Highland ave., from Ninth to 15th sts.

**Knoxville, Tenn.**—Opening of Jackson ave. is under consideration; also widening of Front ave.

**Nashville, Tenn.**—Construction of Capitol blvd. is being discussed.

**Beeville, Tex.**—Bids are being received for construction of 30,000 sq. ft. of concrete sidewalk.

**Corpus Christi, Tex.**—City Council has called election March 25 for voting on \$150,000 street paving bonds.

**Carroll Springs, Tex.**—Election was held to vote bonds for street improvement. Bonds to be issue were \$5,000 and carried by a majority of five to one.

**Denton, Tex.**—The \$75,000 Lewisville rd. bonds, amounting with interest accrued to \$76,500, have been sold by Commissioners' Court to J. H. Woods, of Dallas.

**Fort Worth, Tex.**—Commissioners of Tarrant County have appointed Advisory Committee to act with Commission regarding expenditure of \$1,600,000 road and bridge funds recently voted by people.

**Grand Saline, Tex.**—Election will be held April 6 for voting on \$50,000 road bond issue for the Grand Saline District.

**New Braunfels, Tex.**—Bids on 2,000 ft. of cement curbing and 2,000 ft. of cement sidewalk are wanted by city of New Braunfels. Address F. G. Blumberg.

**Texarkana, Tex.**—Grading and graveling of Carmichael Hill, to cost \$15,000, and other street paving projects, to cost \$100,000, are being considered.

**Orange, Tex.**—Orange County \$200,000 bond issue for good roads has been awarded to Spitzer, Rorick & Co., of Toledo, O.

**Smithville, Tex.**—Petition is being circulated by Ten Thousand Club asking Commissioners' Court to order election in Commissioners' Precinct No. 2 of Bastrop County to decide if precinct will issue bonds for \$100,000 to build about 40 miles of good roads.

**Terrell, Tex.**—Bids offered for paving in East Terrell have been refused by City Commission, and will be readvertised.

**Accomac, Va.**—Motion to bond county for \$50,000 for road improvement has met with approval.

**Salt Lake City, Utah**—Estimate of city's portion of cost of curbing and guttering unpaved streets on north bench, presented to City Commission, totals \$58,069.24. Entire cost of proposed improvement will be more than three times this amount. Estimate has been referred to Street Department.

**Cape Charles, Va.**—Proposition to bond county for \$150,000 for building roads will probably be voted for.

**Norfolk, Va.**—Public Improvement Committee of City Council has approved of \$1,701 appropriation for improvement of south end of Manteo st.

**Petersburg, Va.**—Board of Aldermen has adopted resolution providing for bond issue of \$200,000 to be voted on at June election, to be known as "public improvement bonds"; \$50,000 of this amount will be for street improvements.

**Richmond, Va.**—Estimate has been presented by City Engineer Bolling for opening 15th st. northwardly as through driveway, from Main st. to Marshall st., tunnelling under Broad st., total cost, including curbing, paving and retaining walls, being \$70,600.

**Richmond, Va.**—Plans for proposed boulevard from park to park are under consideration; estimate of cost of grading, macadamizing and graveling necessary to build proposed road, not counting cost of bridge, State Highway Commission Wilson has estimated to be \$45,143.80.

**Spotsylvania, Va.**—Stafford County will ask for bond issue of \$100,000 to aid in carrying forward this great national roadway.

**Seattle, Wash.**—Resolutions have been adopted by Board of Public Works for paving of Harrison st.; estimated cost, \$28,500; and paving of 11th ave., west; estimated cost, \$18,500; also for paving of Montlake blvd.

**Spokane, Wash.**—Commissioner of Public Works D. C. Coates has announced that Main ave., from Lincoln to Monroe st., and Monroe st., from bridge to Riverside, will be paved this spring, probably with asphalt, so that south approach to new bridge will be in good shape.

**Hinton, W. Va.**—Summer County Court has sold \$105,000, 32-year, 6 per cent. Greenbrier and Talcott district road bonds at \$1.06, to McCoy & Co., of Chicago.

**Ashland, Wis.**—Ashland County Board has decided to issue bonds to amount of \$50,000 to build new roads and repair old ones, and County Highway Commission figure on putting in about \$35,000 in building macadam road entire length of county.

**De Pere, Wis.**—City Council has decided to take bids on number of different kinds of pavements instead of one kind.

#### CONTRACTS AWARDED

**Birmingham, Ala.**—By City, to C. M. Burkhalter, of Birmingham, at \$2,460, for grading, curb and sidewalk on Cherry st., from Eighth to 15th ave., and to L. Brooks, at \$1,082.50, for sidewalks and curbing on Mamie ave., four blocks.

**Argenta, Ark.**—By City, to M. D. L. Cook, Little Rock, Ark., to pave S. Main st., from Washington to Riverside ave.

**Los Angeles, Cal.**—To George R. Curtis, at \$5,178, for improving prospect ave., from Maubert to Prospect aves. Work consists of grading and graveling, cement curbs and gutters, vitrified block gutters and sidewalks.

**San Bernardino, Cal.**—To E. R. Werdin, Pay Rider, Los Angeles, for improving E. st., at 13¼ cents per sq. ft. for asphalt paving; 13¼ cents for cement gutter; total bid, \$3,545.

**San Francisco, Cal.**—By Board of Public Works, to Barber Asphalt Paving Co., for constructing pavement, consisting of 6-in. concrete foundation on a 2-in. wearing surface, at 27 cents per sq. yd., and for construction of granite curbs, at \$1.35 per lin. ft. on 24th ave., between California and Lake sts.

**New Britain, Conn.**—By Board of Public Works and Common Council, for permanent pavement for Arch st. to the Southern New England Paving Co., for sheet asphalt to be laid at price at \$2.35 per sq. yd.

**Jacksonville, Fla.**—By Committee on Public Works, for paving of Bay st., to Jacksonville Paving Co.

**Miami, Fla.**—By Dade County Commissioners, to R. C. Dittman, at \$1,288, to construct rock road from Goulds to connect with Miami and Homestead rd.

**Brownstown, Ind.**—To James E. Galven, of Seymour, Ind., by Board of Jackson County Commissioners, for construction of gravel road in Hamilton Township, at \$2,943.

**Danville, Ind.**—By Board of Hendricks County Commissioners, to Larkin & Vaughn, for improving Masten rd., at \$6,044.

**Fort Wayne, Ind.**—By Board of Public Works, for furnishing asphalt repair plant, to Hertherington & Berner Co., of Indianapolis, at \$4,685, and for furnishing steam roller to Kelly Steam Roller Co., of Springfield, O., at \$1,575.

**Corning, Ia.**—By City Clerk, for paving various streets in this city, to Dunnegan & Hamilton, at \$1.84 per sq. yd.

**Baltimore, Md.**—By Board of Awards, to David Andrews Co., Mt. Vernon and 26th sts., at \$20,617, for laying vitrified block on Biddle st. and on Hartford st., and also at \$47,389 for laying vitrified



block on Madison, Ensor and Aisquith sts.; to N. A. Middleton Co., at \$17,328, for laying granite block on Camden st. and on Barre st., and also at \$25,000, for laying granite blocks on Harford, Ensor and Chester sts.; to Cunningham Paving & Construction Co., 1345 Arch st., Philadelphia, Pa., for laying granite blocks on Constitution and on Bond sts., at \$28,746.

**Birmingham, Mich.**—Village Council will sell sanitary sewer bonds amounting to \$25,000. These bonds are of the denomination of \$1,000 each.

**Muskegon, Mich.**—To Markle Cement Co., for construction of 3,533 sq. yds. of paving on Washington st.

**Hazlehurst, Miss.**—For completing about 35 miles gravel road in District No. 1, to McTighe, Hughey & McTighe, of Memphis, Tenn.

**Jackson, Miss.**—By Highway Commission of the First and Fifth Districts of Hinds County, to Worthington Construction Co., for construction of proposed Jackson and Terry rd.

**Hazlehurst, Miss.**—By Board of Supervisors of Copiah County, to McTighe, Hughey & McTighe, Memphis, Tenn., for construction of about 35 miles of gravel highway in District No. 1.

**Montclair, N. J.**—For about 34,300 sq. yds. granite block paving on both sides of trolley tracks on Bloomfield ave., to Philip and Peter Jannarone, of Belleville, at \$117,000.

**Newark, N. J.**—By Joint Commission of Essex and Hudson Freeholders, for temporary replanking of Plank rd., to Trexler Lumber Co., of New York, N. Y., at \$18,400.

**Rochester, N. Y.**—By Board of Contract as follows: For making repairs on asphalt streets for 1912, to Whitmore, Rauber & Vicinus, 279 South ave., at \$49,500; contract for Genesee Valley Park blvd., to John Petrossi Co., for \$20,802.

**Syracuse, N. Y.**—By Board of Contract & Supply, for asphalt pavement in Waverly ave., to Guy B. Dickinson, at \$4,372.30.

**Cincinnati, O.**—To Charles L. Wright, for improving Wooster Pike, at \$51,382.

**Cleveland, O.**—By County Commissioners, to Wilson & Harper Construction Co., Zanesville, at \$34,000, for paving Union rd., from Kinsman st. to city limits.

**Youngstown, O.**—To James De Jute, to pave Pearl st., at \$18,542, and to Turner & Olson, to pave Garland ave., at \$11,017.

**Orangeburg, S. C.**—By City Council, at \$15,556, to Berghaus & Fairley Co., this city, for extension of brick paving, on E. Russel st. and South Broughton st.

**Dallas, Tex.**—For replacing cement sidewalks around water meters, to Geo. A. Roome, at 13 cents per sq. yd.

**Galveston, Tex.**—For grading and shelling of South rd., from Seventh to 13th Mile Post, thence to beach, by County Commissioners, to Hanson Sons, Inc., Galveston, at \$27,510.

**Galveston, Tex.**—By Board of City Commissioners, to Kelso & Vantrien, Galveston, at \$19,064, for paving several downtown alleys with brick.

**Houston, Tex.**—To Creosoted Wood Block Paving Co., New Orleans, La., for paving with wood block, thoroughfare one-fourth mile long, between Washington ave. and White Oak Bayou. Contract was awarded at \$22,349.

**Ritzville, Wash.**—By Board of Commissioners of Adams County, to Naylor & Worlin, Spokane, Wash., for construction of permanent highway No. 1.

## SEWERAGE

**De Queen, Ark.**—Plans are being prepared for sewer system by Dickinson & Watkins, Engineers, Little Rock.

**Pasadena, Cal.**—Resolution adopted by Inter-City Committee, calling upon municipal authorities of Alhambra, South Pasadena and Pasadena to instruct City Engineers to get together and investigate feasibility of proposed outfall sewer from foothill district to ocean, is being considered.

**Venice, Cal.**—Special election to vote \$43,000 in bonds for improvement of sewer and garbage disposal system is called for April 4. Extension of outfall pipe into Pacific Ocean is one of improvements desired.

**Bridgeport, Conn.**—Construction of proposed trunk sewer on Barnum ave. is being considered.

**Washington, D. C.**—Bills have been passed authorizing Commissioners to employ competent sanitary engineer of recognized ability and experience to investigate collection and disposal of garbage, ashes, refuse, etc.; estimated cost, \$10,000.

**Jacksonville, Fla.**—Chief Engineer L. D. Smoot has submitted estimate for relieving drainage conditions on Eighth st., showing it is necessary to expend \$6,500

to lay 18-in. terra cotta pipe in concrete envelope.

**Ashton, Ill.**—Plans and specifications are being prepared for a complete sewer system and sewage disposal plant, and a water supply system. Estimated cost, \$15,000. Engineers, the Aetna Engineering Bureau, 17 North LaSalle st., Chicago.

**Evansville, Ind.**—Eight declaratory resolutions for local sewers have been passed by Board of Public Works.

**Evansville, Ind.**—Petition has been received by Board of Public Works from residents on Fifth st., from Division to Ingle sts., asking for construction of sewer along Fifth st., from Division to north side of Ingle st.

**Michigan City, Ind.**—Board of Public Works is considering necessity for construction of sewer in Baltimore st., between Michigan and Oak sts. Hearing thereon will be given at 10 o'clock March 13.

**Opelousas, La.**—Board of Sewerage Commissioners of First Sewerage District has fixed March 30 as date for reception of bids for \$40,000 bond issue authorized at special election.

**Grand Rapids, Mich.**—Board of Public Works has been requested to furnish estimate of cost of constructing public sewer in Veto st.

**Baltimore, Md.**—For Sanitary Contract No. 80, lateral sewer at Bay View Asylum: Bond & Bates, Pratt and President sts., Baltimore, \$15,917; Edward Perkins, 1929 North Patterson Park ave., Baltimore, \$19,202; David M. Andres & Co., Mt. Vernon ave. and 26th st., Baltimore, \$19,231; Raymond H. Williams, Equitable Bldg., Baltimore, \$19,838; Ryan & Reilly, Baltimore, \$20,657; N. A. Middleton & Co., Continental Bldg., Baltimore, \$22,409; Frank B. Sweeten, Baltimore, \$23,193; Martin J. Beach, American Bldg., Baltimore, \$23,207; D. Rich, 3205 Clifton ave., Baltimore, \$24,497; Whiting-Turner Construction Co., Sexton Bldg., Baltimore, \$20,077; Charles Bevan Clark, Baltimore, \$26,920. Sanitary Contract No. 83, furnishing nozzles, deflectors and specials at the sewage disposal plant: Pacific Flush Tank Co., 149 Broadway, New York, \$2,569; Merritt & Co., Camden, N. J., \$2,900. Calvin W. Hendrick is Chief Engineer, Sewerage Commission.

**Laurel, Md.**—Proposed sewerage system is being discussed. Bill authorizing Mayor and City Council to borrow \$35,000 for this purpose will be submitted to voters at special election March 12.

**Boston, Mass.**—Commissioner Rourke, of Public Works Department, has called upon Mayor's office for \$874,000 for general sewerage works in city during coming year, in addition to amount set aside for separate system of drainage amounting to \$400,000. Commissioner says he absolutely needs \$845,000, and should have at least \$874,000. For last year Commissioner was allowed \$250,000 in addition to the \$400,000 appropriation for sewers, and he says that he found that amount was insufficient. This year he wants \$341,580 for sewerage works in Dorchester, \$306,644 for city proper, \$20,750 for Hyde Park, \$29,282 for Roxbury, \$89,850 for East Boston, and \$43,000 for South Boston. For emergencies he wants \$25,000.

**Salem, Mass.**—Order has been sent to Committee on Finance to appropriate \$10,000 for separating surface water and sewerage system.

**Mount Morris, N. Y.**—Appropriation of \$45,000 for sewerage system has been authorized.

**Mitchell, Neb.**—Bruce & Standeven, Omaha, are preparing plans for construction of outlet sewers; estimated cost, \$13,200.

**Hackensack, N. J.**—Engineer Campbell has announced that he will have his plans completed within next two weeks for future sewage disposal.

**South Orange, N. J.**—Ordinance has been passed for construction of sewers in various streets.

**Wildwood, N. J.**—City Engineer Weir is preparing plans and specifications for a sewer disposal plant for new city of Wildwood.

**Artesia, N. M.**—At spring election Artesia will probably vote on proposition of issuing bonds to amount of \$25,000 to install sewer system that will extend over whole town and will require about nine miles of pipe.

**Buffalo, N. Y.**—Aldermen have approved of \$2,000,000 issue of bonds for enlargement of trunk sewer system.

**Rochester, N. Y.**—Common Council will take up several local improvement ordinances, biggest of which will be Railroad, Goodman and Webster ave. outlet sewer, estimated cost of which is \$230,000.

**Watervliet, N. Y.**—Bids for elimination

of Dry River have been opened by Storm Sewer Commission. Bids range from \$163,000 to \$249,500. Separate bids were received on different parts of work, and aggregate amount of lowest combination is \$160,400. Raymond M. Booth, of Albany, offered to do work for \$162,000, and John Allen, of Schenectady, offered to build conduits for \$98,422.07. Mr. Allen is low on this part of contract and combination is less than any complete bid, and it is understood that he is favored by Commission.

**Cincinnati, O.**—First step toward new sewerage system will be taken at next Council meeting when Councilman John Weld Peck will introduce ordinance for issue of \$25,000 bonds to pay expenses of engineering work in connection with working out of sewerage plan. Councilman Peck said he would recommend to Council that it set aside \$125,000 of available bonding capacity of city for sewer system.

**Cleveland, O.**—Bids will be received until 12 noon, March 18, at office of City Auditor, for purchase of \$180,000 Dugway Brook west branch main sewer coupon bonds.

**Dayton, O.**—Bids will be received until 12 noon, March 5, by City Auditor, for purchase of 5,100 bonds for constructing sanitary sewers in Lakeview ave., Sewer District No. 6. Geo. W. Bish, City Auditor.

**Dayton, O.**—Plans and specifications submitted by City Engineer Cummin, for construction of sanitary sewers on Springfield st., from old corporation line to new corporation line, which was estimated to cost \$4,450, have been received and filed.

**Niles, O.**—Board of Control will advertise for bids for construction of sanitary sewer in Hyde st., from Park ave. to Warren ave.

**Urbana, O.**—Plans for the Urbana sewer system will be presented to State Board of Health at monthly meeting. Sewer plans as presented to Board have been drawn up by City Engineer Pratt and provided for sanitary sewers. Plans do not provide for storm sewers.

**Allentown, Pa.**—Mayor Rinn has been elected chairman of the Commission recently provided for by Allentown Councils to devise plan to finance sewerage system for Allentown, which will cost in neighborhood of \$1,000,000.

**Erie, Pa.**—Ordinance has passed third reading for construction of 9-in. sewer in 26th st.

**Franklin, Pa.**—Ordinances have been passed for construction of sewers in various streets.

**Hazleton, Pa.**—Ordinance has been introduced for construction of sewer in Allen st., beginning between Sixth and Seventh sts. and ending at 10th st.

**Hazleton, Pa.**—Ordinances have been passed providing for construction of stone arch sewer on Maple st.; stone arch or concrete sewer along line of Hemlock st. and Bunton Bock Creek, and terra cotta pipe sewer on Grant st., beginning between 10th and 11th sts. northward to 17th st.

**South Bethlehem, Pa.**—South Bethlehem Council is considering plans for \$100,000 sewage system.

**Sion Falls, S. Dak.**—City Commissioners have sold to Chicago men bonds amounting to \$300,000 for sewerage and waterworks purposes.

**Cuero, Tex.**—Construction of complete sewer system is being considered by City Council.

**Midland, Tex.**—Installation of system of sewers is being discussed; estimated cost, \$50,000.

**Petersburg, Va.**—Board of Aldermen has adopted resolution providing for bond issue of \$200,000, to be voted on at June election; \$50,000 of this amount will be for sewers and water mains.

## CONTRACTS AWARDED

**Boyles, Ala.**—To Sullivan, Long & Hagerty, Bessemer, Ala., for construction of three miles county sanitary sewer; cost \$34,123.20. L. A. Salter, Room 101 Court House, Birmingham, Ala., is Engineer.

**Little Rock, Ark.**—By Commissioners Sewer District No. 69, to M. D. L. Cook, of Little Rock, at \$35,500, to construct sewer. F. A. Kingsley is Engineer.

**San Diego, Cal.**—For constructing sewer system from Third and E. sts. to bay, to C. H. Julian, 1228 Second st., San Diego, at \$8,000.

**Denver, Col.**—By Board of Public Works, for constructing sanitary sewers in Sub. District No. 11, West and Southside Sanitary District, to Denver & Pueblo Construction Co., for \$26,057. Other bidders: Westcott-Doan Investment Co., \$21,998; Commonwealth Construction Co.,

\$28,255; D. G. Gordon, \$28,631; P. O'Brien Construction Co., \$28,735; Gaffy & Keefe Construction Co., \$28,824; Dennis Gibbons, \$29,311; A. J. Baker, \$29,469; Hughes & Williams, \$29,510. The materials to be used in construction consist of 30,823 lin. ft. 8-in. vitrified pipe sewer, 3,927 lin. ft. 10-in., 3,299 lin. ft. 12-in., 2,311 lin. ft. 15-in., 125 manholes, 35 single flushes, etc.

**St. Paul, Minn.**—To Kircher Bros., of Hudson, Wis., for construction of sewer at Anoka Asylum for Insane by State Board of Control. Estimated cost, based upon their bid, is \$14,932.

**Pensacola, Fla.**—By Board of Public Works, for making sewer connection to residences, to Tower Construction Co., for connections amounting to between \$10,000 and \$15,000.

**Fort Valley, Ga.**—By City, to J. B. McCrory Co., Third National Bank Bldg., Atlanta, Ga., for constructing six miles of 8- and 24-in. sewers; also settling tank; cost, \$17,000.

**Niagara Falls, N. Y.**—By Commissioners, Sewer Contract No. 243, for sewer in Cleveland ave., from 10th st. to 11th st., and in 11th st., between Cleveland ave. and Lockport st., to Shepard & Callahan, and Contract 245, for sewer in Quay st., from Erie ave. to Buffalo ave., and in Third st., from Falls st. south 175 ft.; Contract No. 246, for sewer and appurtenance in Whirlpool st., between Chilton ave. and Pierce ave., and sewer in 18th st., between Cleveland and Michigan aves.; and Contract No. 247, for sewer and appurtenance in 11th st., between Portage rd. and Whitney ave., and sewer in Whirlpool ave. near Sugar st., to Nick Nolfe.

**South River, N. J.**—By Borough Council, for erection of stand pipe, to Tibbett & Wood, at \$4,600.

**Kennedy Heights, O.**—For constructing sanitary sewers in Districts 1 and 2, to Frank Burns, at \$22,433. Other bids as follows: Thomas P. Strack, \$27,942; John B. McLane, \$25,104; J. E. Mahoney, \$31,326; McCarthy Bros., \$24,751; Evan Evans, \$37,394.

**New Philadelphia, O.**—For constructing sanitary sewer system, to Van Meter Construction Co., of Steubenville, O., at \$52,410. Other bids were: William Brode & Co., Newcomerstown, \$63,025; Julius Keller Construction Co., Indianapolis, Ind., \$61,258; George J. Bock & Son, Coshocton, \$63,424; Ott Bros. Co., Pittsburgh, Pa., \$64,799; John B. McLane & Co., Newport, Ky., \$63,920; W. M. McDowell & Son, Cleveland, \$55,338; J. W. Stringer, Akron, \$52,818; E. M. McSheffrey & Son, Akron, \$61,523; Frank George, Batavia, N. Y., \$58,381; F. M. Benner & Co., Marion, Ind., \$59,584; J. B. Sheets Co., Pittsburgh, Pa., \$53,643; Kimbrough & Elder, New Castle, Pa., \$61,103; Central Construction Co., Parkersburg, W. Va., \$62,791; Adams Bros. Construction Co., Zanesville, \$59,662; J. Connelly Construction Co., Cleveland, \$76,595. For constructing storm sewer, to Henderson Bros. Co., Coshocton, O., at \$27,362. Other bids were: J. Connelly Construction Co., \$40,589; Adams Bros. Construction Co., Zanesville, \$27,446; Central Construction Co., Parkersburg, W. Va., \$27,723; Frank George, Batavia, N. Y., \$31,855; E. M. McSheffrey & Son, Akron, \$34,470; J. N. Snyder, Canton, \$33,688; Ott Bros. Co., Pittsburgh, \$41,261; William McDowell & Son, Cleveland, \$31,240; Van Meter Construction Co., Steubenville, \$28,804; John B. McLane & Co., Newport, Ky., \$33,308.

**Muncie, Ind.**—By Board of Public Works, for construction of sewer in E. Washington st., to William Birch, at \$7,165.26, or \$1.80 per lin. ft.

**Salem, O.**—By Board of Control, for building of sewage disposal plant, to W. H. Ralston, of Mt. Vernon, at \$48,268.49.

**Williamsport, Pa.**—By Highway Committee of Councils, for house sewer in Funston ave., to M. Schrade, at \$955.05. Other bids as follows: Newberry, Busch & Stewart, \$1,039.29; Mr. Dugan, \$955.25; Coryell Construction Co., \$1,042.20.

### WATER SUPPLY

**Gadsden, Ala.**—Installation of water meters has been authorized.

**Los Angeles, Cal.**—New York syndicate, headed by bond firm of Speyer & Co., has purchased remaining \$2,890,000 aqueduct bonds.

**Wethersfield, Conn.**—Plans to expend \$25,000 in laying water mains are being considered by Water Board.

**Wilmington, Del.**—City Council has passed ordinance providing for bond issue of \$45,000 to refund water bonds.

**Chinley, Fla.**—Bids will be received until March 11, by Mayor, for purchase of \$22,000 waterworks bonds. Walter Cook, City Clerk.

**Americus, Ga.**—Election will be held March 20 to decide whether city will issue bonds for installation of water meters throughout city.

**Whigham, Ga.**—City will vote on \$12,000 bond issue for extension of waterworks and building electric light plant.

**South Bend, Ind.**—Board of Public Works has accepted plans of Burns & McDonnell, consulting engineers, of Kansas City, Mo., for rebuilding of waterworks at cost of \$200,000.

**Cimarron, Kan.**—New water system will be established.

**Little River, Kan.**—Installation of municipal waterworks plant is being considered.

**Hugoton, Kan.**—Town has appropriated \$10,000 with which to sink experimental well to depth of 2,000 or 3,000 ft.

**Holyoke, Mass.**—Board of Water Commissioners has determined to complete Former Dam.

**Detroit, Mich.**—Water Commissioners have decided to advertise for bids on \$250,000 worth of new bonds, bids to be opened March 26.

**Kalamazoo, Mich.**—People will vote at spring election on \$45,000 bond issue for erection of two new stand pipes.

**Saginaw, Mich.**—Board of Water Commissioners request authority to readvertise for proposals on pumps for eastern district pumping station. Bids received on 17th inst. by Board were rejected, as bids were confined to direct acting duplex pumps only, and it is now desired to ask for proposals on all styles of suitable pumps, keeping within estimate already authorized by Common Council.

**Floodwood, Minn.**—Installation of waterworks system is being discussed.

**Hamilton, Mo.**—Installation of municipal waterworks is being considered.

**Berwick, Pa.**—Town is considering installation of mechanical filtration plant of 4,000,000 gals. daily capacity.

**Atlantic City, N. J.**—Another new 10,000,000-gal. pump for Absecon Water Plant will be purchased by Water Department. Board has authorized Superintendent Van Gilder to prepare specification for huge machinery. New pump will almost double capacity of plant.

**Bellmore, L. I., N. Y.**—Committee appointed at mass meeting of citizens to discuss water question of village is considering advisability of either entering into contract with private water concern, or erecting municipal plant. Sentiment of committee, it is said, leans favorably toward entering into contract with Merick-Belmore Water Supply Co.

**La Salle, N. Y.**—Village is discussing purchase of La Salle Water Company for \$30,000.

**Rochester, N. Y.**—Plans are being considered for extension of water pipes, etc. Work proposed amounts to 20 miles; estimated cost, \$125,000.

**Mount Morris, N. Y.**—Appropriation of \$140,000 to install municipal water system has been authorized.

**Yonkers, N. Y.**—Engineers Hazen and Whipple have prepared plans and specifications for new filter beds authorized by Common Council and approved by Board of Estimate and Apportionment and they will be sent to Commissioner of Public Works. Commissioner will submit plans to Common Council for them to give plans their approval. Board of Contract and Supply will then advertise for proposals.

**Cincinnati, O.**—Bonds for waterworks improvements in sum of \$199,500 will be asked of Council by Superintendent Baldwin to carry out new work decided on. Work planned includes 16-in. main in Madison rd., from Edwards rd. to Columbia ave., in Oakley, to supply North Hyde Park, Oakley, Pleasant Ridge, Kennedy Heights and Silverton, to cost \$20,000; 16-in. main in Spring Grove ave., Mitchell ave., Section ave., Circle ave. and Winton rd., for supply of North Winton pl., at cost of \$30,000; 20- and 25-in. main in State ave., Harrison ave. and Queen City ave., from 8th ave. to western hills pumping station, and by connection to other mains will give additional and independent supply to western hills pumping station. Cost is estimated at \$55,000. Small extensions to be laid during year will take \$39,000 it is estimated; \$40,000 will be needed for purchase of cast iron pipe and special castings; \$3,000 for hauling of pipe, and \$2,500 for material for valves.

**Sioux Falls, S. Dak.**—City Commissioners have sold to Chicago men bonds amounting to \$300,000 for waterworks and sewerage purposes.

**Anahuac, Tex.**—Bonds amounting to \$25,000 have been sold for construction of fresh water reservoir near mouth of Trinity River.

**Stephenville, Tex.**—City has voted \$18,000 of bonds for installation of waterworks.

**Fort Worth, Tex.**—City purchasing agent has been authorized to buy necessary hydrants and fittings for water pipes being laid in Ryan addition.

**Waco, Tex.**—At regular meeting of City Commissioners request was received from Water Commissioner, asking that bond issue, amounting to \$400,000, be submitted to property taxpayers of Waco. If request is granted, \$300,000 will be used for new pumping plant and filtration system, remainder to be expended for extensions.

**Santaquin, Utah**—City will construct new reservoir to cost \$7,000.

**Petersburg, Va.**—Board of Aldermen has adopted resolution providing for bond issue of \$200,000 to be voted on at June election; \$50,000 of this amount will be for water mains and sewers.

**Spokane, Wash.**—City Commissioners have passed emergency ordinance authorizing immediate construction of new supply mains to north hill district, at estimated cost of \$130,000.

**Tacoma, Wash.**—Whether to submit bond issue for \$280,000 to people at general election, April 16, or to issue special water warrants against plant for that sum in order to complete Green River gravity water system project is being considered by Municipal Commission.

### CONTRACTS AWARDED

**Fort Mason, Cal.**—To Caldwell & Co., for construction of fire protection pumping station, at \$110,000.

**Monrovia, Cal.**—By City Trustees, for furnishing and laying approximately 5,620 ft. 14-gauge, 14-in. inside diameter riveted steel pipe, to Crane Co., of Los Angeles, at \$28 per 100 ft.

**Belvidere, Ill.**—By Purchasing Committee, to Jas. B. Clow & Sons, 544 S. Franklin st., Chicago, at about \$2,000, for extensions to waterworks.

**Bloomington, Ill.**—For construction of cast iron water mains as follows: Mulberry st., between Western and Hinshaw aves., to McGregor-Lederer, city, \$1180.11; Mill st., between Gridley and McLean sts., to Frank Sullivan, \$450.30.

**Fort Branch, Ia.**—To J. H. Cole, of South Bend, Ind., for installation of waterworks here at his bid of \$20,000.

**Pittsfield, Mass.**—For furnishing 2,616 tons of cast iron water pipe and specials, by Board of Public Works, to U. S. Cast Iron Pipe & Foundry Co., 71 Broadway, New York, at \$57,293. Other bids were: Florence Iron Works, Florence, N. J., \$58,277; Standard Cast Iron Pipe & Foundry Co., Bristol, Conn., \$59,123; Charles Millar & Sons Co., Utica, N. Y., \$59,490; John Fox & Co., New York, \$59,921; Warren Foundry & Machine Co., New York, \$61,638.

**Flint, Mich.**—For furnishing 12,000-gal. horizontal cross-compound pump, condensing opposed type, to Snow Steam Pump Co., Buffalo, N. Y.

**Oakwood, Mich.**—By Detroit Board of Water Commissioners, for laying 24-in. water main under Rouge River at Fort st. to George Lockerbie, of Detroit, at about \$3,675, not including cost of material.

**Stillwater, Minn.**—By Board of Water Commissioners, for constructing steel standpipe, to Chicago Bridge & Iron Works, of Chicago, Ill., for \$3,638; contract for foundation was let to Albert Ertitz, of Stillwater, for \$825. Lewis W. Clarke is City Engineer.

**Atlantic City, N. J.**—For furnishing new air pump for Absecon pumping station, to Platt Iron Works, Philadelphia, at \$2,418.

**Newburgh, N. Y.**—By Board of Trustees of Cornwall, for construction of new reservoir on top of Cornwall Mountain, to A. M. Harper & Co., at \$19,537.40. Other bids as follows: J. M. Solomon & Co., \$23,504; Garnett N. Graham, \$22,152; J. W. Heller, of Newark, N. J., \$24,492; C. M. Lockwood, of Peekskill, \$19,940; J. P. O'Mara, \$23,437.32; Schunemunk Construction Co., \$23,816; E. J. Doyle & Co., of Albany, \$21,400; Wolcott & Haigh, \$24,315; Pierson Engineering Co., of Bristol, Conn., \$31,956; Middletown Construction Co., \$21,698.50; Sneed & Wilson, of Brown's Station, \$23,332; O'Fagnum & Faxon, \$32,172; the Gifford Construction Co., of Jamaica, L. I., \$33,812.

**Columbia, S. C.**—For repairing and overhauling water power pumping plant, by Mayor and City Council, to American Machine & Manufacturing Co., Charlotte, N. C., at \$5,892.

**Columbus, Tex.**—By Colorado County Commissioners, to Des Moines Bridge & Iron Works, Des Moines, Ia., at \$3,800, to erect steel water tower and reservoir;



reservoir to have funnel-shaped bottom upon 3-ft. standpipe extended down to ground, and will be supported upon steel frame construction 60 ft. high; capacity, 75,000 gals.; about 53-ft. line from ground.

**Seguin, Tex.**—By City, to J. H. Poto-nowitz, Box 119, San Antonio, Tex., for standpipe, cast iron pipe, valves and fittings for recently-noted improvements; cost completed about \$20,000.

**Owen, Wis.**—By Village, as follows: Furnishing 1,300 ft. of 6-in. and 6,722 ft. of 8-in. cast iron pipe, Class B, to Massillon Iron & Steel Co., Massillon, Ohio., at \$25.40 per ton; erecting 40,000-gal. steel tank on 80-ft. steel tower, to Chicago Bridge & Iron Co., 105th and Throop sts., Chicago, Ill., at \$2,700.

## LIGHTING AND POWER

**Dothan, Ala.**—Installation of lighting system has been authorized, and contract will shortly be awarded for same.

**Dothan, Ala.**—W. Harrison, Jr., of Mansfield, La., and J. U. Cureton have asked city for franchise for \$50,000 gas plant.

**Gadsden, Ala.**—Extension of lighting system is being considered.

**Los Angeles, Cal.**—New York syndicate, headed by bond firm of Speyer & Co., has purchased \$3,500,000 power bonds.

**Bridgeport, Conn.**—Installation of municipal electric light plant is being considered.

**Daytona, Fla.**—Voters have ratified proposed franchise to grant Schwartz Electric, Ice & Water Co. permission to operate and maintain gas plant in city.

**Americus, Ga.**—Election will be held March 20 for voting on erection of municipal electric lighting plant.

**Atlanta, Ga.**—Meeting of electric lights committee of City Council will be held shortly for purpose of asking bids on city's street lighting.

**Covington, Ga.**—City wishes bids on one 45 horsepower gasoline engine to be belted to generator making 900 revolutions per minute. F. P. Harrison, Superintendent of Water and Light Department.

**Wingham, Ga.**—In municipal election held in Wingham citizens voted \$12,000 in bonds by good majority, to be used as follows: \$7,000 for electric lights, \$2,000 for improvements of streets, and \$2,000 for additional improvements such as extending water mains, etc.

**Hartford City, Ind.**—Proposition to erect ornamental lamp posts is being considered.

**Burlington, Ia.**—Draft of ordinance authorizing granting of franchise to Burlington Power Co. has been formally presented to City Council.

**Council Bluffs, Ia.**—Recommendation that Fire and Light Committee be given power to install flaming arc lights along Broadway at each street intersection, from Northwestern tracks to 37th st., has been brought before City Council and approved by Council.

**Tipton, Ind.**—City Council of Tipton has granted franchise for artificial gas plant, to A. G. Ogburn and associates for period of 25 years. Gas will be ready for use by Nov. 1.

**Baltimore, Md.**—For furnishing underground cable work from South st. power house to City Hall, as follows: Lord Electric Co., \$10,400, alternate No. 1 \$686, alternate No. 2 \$274; Standard Underground Cable Co., \$10,715, \$600, \$277; Rosenfeld Electric Co., \$12,125, \$675, \$190; Central Electric Co., \$10,912, \$1,250, \$150; Eugene Rosenfeld, \$11,515, \$1,200, \$50.

**Cedar Springs, Mich.**—At special election village almost unanimously voted to grant franchise to Grand Rapids-Muskegon Power Co. to furnish village with electric lights and power.

**Cheboygan, Mich.**—Cheboygan Electric Light & Power Co. will extend its light service as far as Topinabee in spring. This company will spend \$40,000 in improvements and extensions.

**Gladwin, Mich.**—Charles W. Kiehl, of Saginaw, has obtained franchise from City Council to light city. Under franchise, which is to run 30 years, Kiehl is to furnish street lights of 100 candle-power for \$20 a year and to other consumers for eight cents per kilowatt hour. City has right to purchase plant and equipment at any time.

**Kalamazoo, Mich.**—After several months of continuous investigation of municipal lighting problem from every viewpoint, special Lighting Commission, consisting of five members, made its recommendations to City Council. Committee favors continuance of municipal lighting plant with recommendation that City enter commercial lighting business as now operated in Lansing and Fort Wayne. They recommend that bonds be issued for \$140,000, of which \$115,000 is to

cover cost of renewing present municipal lighting plant and remaining \$25,000 is for building of ornamental lighting system for downtown section.

**Kalamazoo, Mich.**—People will vote at spring election of \$140,000 bond issue for new municipal light plant.

**Fergus Falls, Minn.**—City Council has decided to call special election to decide whether they wish to rebuild wrecked city dam, or to accept proposition of Ottertall Power Co. to furnish electricity for city's system at 2 cents a kilowatt for all up to 600,000 and 1½ cents kilowatt for larger amounts.

**Billings, Mont.**—Application for franchise which will permit establishment in city of gas plant and laying of necessary distributing system so that product may be sold to consumers for fuel and illuminating purposes, has been made to City Council by W. B. Snyder, of Grand Forks, N. Dak.

**St. Joseph, Mo.**—H. C. Westover, of firm of Rollins & Westover, Engineers, has reported to Board of Public Works that municipal electric light plant should not cost more than \$400,000.

**Kearney, Neb.**—Citizens have voted in favor of \$40,000 electric bonds to erect municipal street lighting system.

**Atlantic City, N. J.**—The new \$15,000 bond ordinance providing for Electrical Bureau improvements, burying of wires and other improvements, will be reported to Council for second reading.

**Camden, N. J.**—From plans received by committee it is estimated that city could erect municipal light plant for between \$200,000 and \$300,000.

**Trenton, N. J.**—Township Committee-man Alexander Laird, of Bromley Place District of Hamilton Township, is endeavoring to have Public Service Corporation to lay pipe line from East Clinton ave. and East State st. to Bromley Inn, for purpose of erecting more gas lights in that vicinity.

**Vineland, N. J.**—Mayor and Council desire to obtain bids for furnishing all labor and materials necessary to erect smoke stack at power house. W. W. Kruse, Superintendent of Public Works.

**Cohocton, N. Y.**—Installation of electric lighting is being discussed.

**Mt. Vernon, N. Y.**—Installation of street lighting system to form Great White Way is being considered.

**Newburgh, N. Y.**—It is probable that new plan of ornamental street lighting will be presented to City Council.

**Whitakers, N. C.**—Installation of electric lighting plant has been authorized.

**Salem, O.**—By unanimous vote at special meeting, City Council instructed Service Director Rummell to have the Bailey Engineering Co., of Alliance, draw plans and prepare specifications for Tungsten incandescent lighting system.

**Springfield, O.**—City Council has authorized issuance of \$60,000 worth of bonds for lighting purposes and it is understood will make arrangements to sell the bonds on April 9.

**Meyersdale, Pa.**—Four companies have applied for franchise to illuminate Meyersdale. They are: Glade Valley Electric & Power Co., the Consumers' Electric Co., the Somerset County Electric Co., and the Meyersdale Light, Heat & Power Co. Meyersdale Council will act upon applications in April. Council has granted local company extension of 90 days of franchise under which it now operates.

**Elk Point, S. Dak.**—It is planned to call election to vote bonds in sum of \$10,000 for electric light plant.

**Dallas, Tex.**—Plans to effect special illumination of Commerce and Main sts., from Houston st. to Central Railway, are being discussed.

**Clifton Forge, Va.**—City has purchased all pipe lines, riparian rights and rights of way of Clifton Forge Light & Water Co., at \$180,000.

**Tacoma, Wash.**—H. F. Gronen, Chief Engineer of Nisqually municipal power plant project, has urged Commission to instruct him to have 10,000-ft. tunnel in project widened to increase its capacity. Estimated cost is \$30,000. Gronen was instructed by Commission to prepare detailed estimate of cost.

## CONTRACTS AWARDED

**Montgomery, Ala.**—By Board of City Commissioners, to Montgomery Light & Water Power Co., to supply city with illumination for period of 10 years, beginning January, 1913.

**Lynn, Ind.**—By Town, for furnishing of electric lights, to Citizens' Water & Light Co.

**Elizabeth, N. J.**—By Board of Freeholders, for power house building at Bonnie Burn Sanatorium in Fanwood Township, to M. Byrnes Building Co., at \$23,685.

**Ellensburg, Wash.**—By City Council,

with the Evans-Dickson Co., of Tacoma, Tuesday afternoon, for 124 cluster light poles, valued at \$3,782. Poles are of three-lamp variety and are to be placed on main business streets of city, Third, Fourth, Fifth, Main, Pearl and Pine.

## FIRE EQUIPMENT

**Montgomery, Ala.**—City will shortly purchase about 2,000 ft. of new fire hose. Bids will be asked in a few days.

**Vacaville, Cal.**—Purchase of new steam fire engine is urged by Fire Department.

**Visalia, Cal.**—Bids are being received on motor fire engine.

**New Britain, Conn.**—Purchase of motor combination hose and chemical car is being considered.

**New London, Conn.**—Purchase of combination chemical hose and pumping apparatus that will do service of chemical and hose wagon and also steam fire engine is being discussed.

**Plymouth, Ind.**—Purchase of motor combination hose and chemical car is asked by fire chief.

**West Terre Haute, Ind.**—Apparatus will be purchased for new Fire Department.

**Marshalltown, Ia.**—Council has decided to buy motor fire truck and has authorized Councilman Herman to advertise for bids for fire truck, each bidder to supply his own specifications for his truck.

**Sioux City, Ia.**—Purchase of motor triple combination pumper, chemical and ladder truck is being discussed.

**Biddeford, Me.**—Chief Engineer of Fire Department recommends purchase of motor combination truck, with pumping attachment.

**Clinton, Mass.**—Appropriation of \$13,000 has been authorized for improvements in Fire Department.

**Gloucester, Mass.**—For furnishing city with 1,500 ft. of 2½-in. hose, as follows: Gutta Percha Mfg. Co., Rescue, 400 lbs. pressure, 65c.; Princetown, 400 lbs., 60c. New Jersey Car Spring & Rubber Co., Sampson, 300 lbs., 55c.; Gibraltar, 300 lbs., 55c.; long fibre, 400 lbs., 65c., 2 per cent. discount; 350 lbs., 55c. C. C. C. Fire Hose & Rubber Co., C. C. C. hose, 400 lbs., 70c.; 350 lbs., 60c., 10 per cent. discount. Eureka Fire Hose Mfg. Co., Perfect Jacket, 75c.; Blue Diamond, 400 lbs., 70c., 10 per cent. discount; Single Knit, 70c. Boston Wove & Rubber Co., Knit Jacket, 400 lbs., 64c.; Middlesex Special, 62c.; Dauntless Special, 350 lbs., 58c.; one-half Brand Single, No. 1, 48c.; No. 2, 54c., 2 per cent. discount. Cornelius Callahan Co., Double Jacket, 400 lbs., 75c.; Knit Single, 350 lbs., 65c.; Woven Double Jacket, 68c.; Woven Single, 63c. L. E. Andrews Co., Underwriters' and Globe Co., 450 lbs., 90c., 2 per cent. discount, guaranteed for four years; 400 lbs., 68c., 3 per cent. discount, guaranteed for three years.

**Lynn, Mass.**—New fire house will be erected in Hollingsworth st., at cost of \$15,000.

**Lynn, Mass.**—Order has been adopted by Municipal Council directing Building Department to prepare plans and specifications for remodeling of Broad st. fire headquarters and Sutton st. police station.

**Reading, Mass.**—Appropriation of \$5,000 will be asked for motor apparatus.

**Springport, Mich.**—Purchase of improved apparatus is being considered.

**Eveleth, Minn.**—City is advertising for bids on furnishing and installing complete storage battery system for fire department. D. F. McIntyre, City Clerk.

**Bloomfield, N. J.**—Chief B. F. Higgins recommends purchase of new hook and ladder truck and additional hose.

**Chelsea, N. J.**—Chelsea is to have a horseless fire station to cost \$60,000, according to plans of the Atlantic City Council. Every piece of apparatus in model station is to be of very latest automobile type.

**Rochester, N. Y.**—Mayor Edgerton will send special message to Common Council recommending additional bond issue of \$125,000 to increase Fire Department.

**Schenectady, N. Y.**—City will purchase electric tractor for Fire Department, to cost about \$5,000.

**Columbus, O.**—Fire Department is preparing to ask for bids on auto tractors; appropriation of \$50,000 has been authorized.

**Portland, Ore.**—Bids are being asked on eight combination motor chemical and hose cars.

**Allentown, Pa.**—Allentown's Finance Committee of Councils has inserted \$8,000 item in next year's budget for automobile fire steamer.

**Bristol, R. I.**—Town Council has adopted resolution recommending \$1,500 appropriation for installing police signal and fire alarm system of boxes.

**Woonsocket, R. I.**—City Council Fire Committee has recommended \$14,000 appropriation for new brick fire station in social district.

**Dallas, Tex.**—Bond issue of \$125,000 will probably be asked for erection of three new fire stations.

**Galveston, Tex.**—Chief Gernand recommends changing of fire alarm repeater and switchboard from four-circuit to six-circuit. Change can be made at cost of \$1,700. If this is not done it will be necessary to install new set of batteries at cost of \$500. Other recommendations include: One extra first-size steam fire engine with copper boiler, to cost \$8,000; an auto hose wagon or combination hose and chemical wagon, to cost \$5,600, and chiefs auto to cost \$3,500.

**Barre, Vt.**—Purchase of motor combination hose and chemical truck is being considered.

**Alexandria, Va.**—Members of Relief Hook and Ladder Fire Co. are circulating petition for erection of new house for that company. Petition will be presented to City Council.

#### CONTRACTS AWARDED

**Los Angeles, Cal.**—For furnishing 10,000 ft. of fire hose as follows: Warren & Bailey Manufacturing Co., 2,000 ft. at 80 cents a ft.; Bowers Rubber Co., 2,000 ft. at 80 cents a ft.; Walsh Agencies Co., 2,000 ft. at \$1, and the Union Well Supply Co., 4,000 ft. at 80 cents.

**Peoria, Ill.**—To Manhattan Rubber Manufacturing Co., of Passaic, N. J., for furnishing 5,000 ft. of fire hose.

**Paducah, Ky.**—To American-La France Fire Engine Co., of Elmira, N. Y., for fire engine, 500 ft. of hose, hose reel, etc.

**New Bedford, Mass.**—By Fire Department Committee, for 100 ft. of fire hose, to C. C. Co., at \$782.50.

**Minneapolis, Minn.**—For furnishing four autos for Fire Department as follows: A Velle 40 horsepower, at \$1,980; a Stoddard-Dayton 30 horsepower, at \$1,400; an Overland, \$1,100 30 horsepower and a 22 horsepower Ford at \$625, last named going to fire alarm service.

**Beaver, Pa.**—For furnishing fire hose as follows: Bi-Lateral Fire Hose Co., 300 ft.; Republic Rubber Co., 300 ft.; Fabric Fire Hose Co., 500 ft.; Gutta Percha Hose & Rubber Co., 500 ft., and Boston Woven Hose & Rubber Co., 400 ft.

**Mt. Carmel, Pa.**—By American Hose & Chemical Co., of Mt. Carmel, for Pierce-Arrow truck, fitted with latest fire-fighting apparatus, to Keeler Motor Co., of Williamsport.

#### BRIDGES

**Denver, Col.**—Construction of viaduct 2,100 ft. long across railway tracks, from 40th to 44th sts., to cost about \$250,000, is being discussed.

**Los Angeles, Cal.**—Final step in procuring funds with which to bridge Arroyo Seco between Los Angeles and Pasadena, which will afford substantial thoroughfare connecting two cities, has been taken by county when Board of Supervisors decided to appropriate \$100,000. City of Pasadena by recent bond issue provided equal amount as its share of cost. Bridge is to be constructed of steel.

**Fairfield, Conn.**—Officials have agreed to pay sum of \$2,000 toward construction of proposed North ave. bridge west of Mountain Grove Cemetery.

**Washington, D. C.**—Seven citizens' organizations of Chevy Chase, Connecticut ave. and Bethesda districts have petitioned Congress for appropriation for new bridge over Rock Creek, at Calvert st., to replace present structure.

**Columbus, Ga.**—Erection of viaduct over railroad tracks, between city and Wynnton, is being considered.

**Salisbury, Md.**—Wicomico County Commissioners have decided to build new bridge over Camden st., Salisbury, at cost of \$12,000.

**Baltimore, Md.**—Erection of bridge over Baltimore & Ohio Railroad tracks, from Latrobe Park to Locust Point Public Baths is being discussed.

**Kalamazoo, Mich.**—People will vote on \$16,000 bond issue for erection of bridge at Mill st.

**West Duluth, Minn.**—City Engineering Department will make its final report in two weeks on estimate for replacing of 40th ave. bridge at Oneota st. with culvert fill early in spring.

**St. Joseph, Mo.**—City Council has adopted ordinance ordering construction of viaduct, from Locust st. to Doniphan ave. on Sixth st. with two laterals, one from Sixth to Ninth on Monterey, and other on Mitchell ave.

**Cannastota, N. Y.**—Bonds in sum of \$80,000 have been awarded to Kesse & Kennicut in New York. Funds will be used in

constructing Broadway steel and concrete bridge.

**Rapid City, S. Dak.**—County Commissioners of Pennington County have decided to build two bridges across Cheyenne River in eastern part of county; estimated cost, \$35,000.

**Beeville, Tex.**—County Commissioners have ordered election held March 30 for voting on \$15,000 bond issue for erection of five bridges on important roads.

**Fort Worth, Tex.**—Commissioner of Tarrant County have appointed Advisory Committee to act with Commission regarding expenditure of \$1,600,000 bridge and road funds recently voted by people.

#### CONTRACTS AWARDED

**Florence, Ala.**—By Lauderdale County Commissioners, to Austin Bros., Atlanta, Ga., to construct steel bridge across Waterloo Creek.

**Atlanta, Ga.**—By City Council, for construction of Bellwood viaduct, to Griffin Construction Co.

**Charleston, Ill.**—To Groggin & Co., of Arcola, for building highway bridge across Ryan Ford, 10 miles south of Charleston.

**Geneseo, Ill.**—By Bridge Committee, for bridge construction as follows: Potters bridge, 130-ft. span riveted truss, to H. S. Wetherell, Morgan Para, Ill., at \$5,600; Green River bridge, 150-ft. span riveted truss, to Joliet Bridge & Iron Co., Joliet, Ill., at \$5,800.

**Ottawa, Ill.**—For construction of 24-ft. reinforced concrete bridge in Dayton Township, to I. L. Woodward, Ottawa, Ill., at \$450. E. J. Belrose is Town Clerk.

**Goshen, Ind.**—By Board of Jasper County Commissioners, for erection of bridges in Kankakee Township, to Henry Cripe, Goshen, at \$492, \$491 and \$489, and one to Attica Bridge Co., Attica, at \$742.

**Hartford City, Ind.**—By Boards of Commissioners of Jay and Blackford Counties, for construction of Hickman steel bridge across Salamonie River on line between two counties, to Rochester Bridge Co., for \$3,849. Other bids were: Attica Bridge Co., \$4,229; Vincennes Bridge Co., \$3,970; Brookville Bridge Co., \$3,990; Indiana Bridge Co., \$3,980.

**Rushville, Ind.**—To Burke Construction Co., Newcastle, for construction of two double-arch concrete bridges on Rush-Hancock Co. line, at \$4,700.

**Boston, Mass.**—By Commissioner of Public Works, for construction of temporary Chelsea north bridge on Chelsea st., to George T. Rendle, at \$178,003.80.

**Bridgeport, Neb.**—For constructing two concrete bridges, one over Platte River, at Bridgeport, and one at Bayard, by County, to John L. Mullen, Lincoln, Neb., at \$41,500.

**Broken Bow, Neb.**—For constructing bridges in county during year 1912, by Commissioners of Custer County, to Omaha Structural Steel Works, Omaha, Neb.

**Schuyler, Neb.**—For constructing steel, concrete and wooden bridges during year 1912, to Elkhorn Construction Co., Fremont, Neb. E. F. Vrzak is County Clerk.

**Fulton, N. Y.**—For city's and county's share of Broadway bridge, to Lew B. Cleveland, of Watertown, for \$125,785, by Board of Public Works of Fulton and Bridge Committee of Oswego County Board of Supervisors.

**Alliance, O.**—By Columbiana County Commissioners, to Frank L. Cox, to erect bridge in Hanover Township.

**Jackson, O.**—By Board of Jackson County Commissioners, to Brookville Bridge Co., Brookville, for construction of bridge in Salt Creek.

**Lisbon, O.**—By County Commissioners, for substructure at Bridge 1,039, in Mid-dletown Township, to William McClain, at \$809, and for superstructure, to Central Concrete & Construction Co., at \$857.50.

**Medina, O.**—By Board of Commissioners of Medina County, to Oregonia Bridge Co., Lebanon, O., for construction of bridge on Cleveland pike.

**Pittsburgh, Pa.**—For constructing reinforced concrete arch bridge on Atherton ave., over Pennsylvania R. R. tracks, by Department of Public Works, to Cranford Construction Co., House Bldg., Pittsburgh, at \$93,128. Other bids are: Friday Contracting Co., 331 Fourth ave., Pittsburgh, \$96,606; Cummings Structural Concrete Co., foot of Sycamore st., Pittsburgh, \$97,060. The structure will be 375 ft. long and 50 ft. wide, with 36-ft. roadway, and will consist of three arch spans, 98 ft. each. N. S. Sprague is Superintendent Bureau of Construction.

**Wellsboro, Pa.**—For constructing four iron bridges, from 35 to 75 ft. long, and 14 to 16 ft. wide, by Commissioners of Tioga County, to Groton Bridge Co., Groton, N. Y., at \$5,227.

**Aberdeen, S. Dak.**—By Brown County Commissioners, to C. E. Gilbert Improved Corrugated Culvert Co., of Aberdeen, for building of four new bridges and for repairing two old ones, at \$12,971.

**Gonzales, Tex.**—By Gonzales County Commissioners, to F. H. Allsberry & Co., Houston, Tex., at \$2,300, to construct five iron bridges.

**Nacogdoches, Tex.**—By City, to Missouri Valley Bridge & Iron Co., Leavenworth, Kan., at \$3,795, to construct two concrete bridges over Banita Creek—one on W. Main st. and other on S. Fredonia st.

**Spokane, Wash.**—By Board of Spokane County Commissioners, for bridges Nos. 4, 15, 18 and 126, to following bidders: Omaha Structural Steel Works, Omaha, Neb., No. 4, at \$15,500; No. 15, at \$5,600; No. 18, at \$5,400. Portland Bridge & Iron Co., Portland, Ore., No. 126, at \$26,588.

#### BIDS RECEIVED

**Portland, Ore.**—Bids for construction of reinforced concrete bridge across Sullivan's Gulch on East 21st st. have been received by City Executive Board, the lowest being that of International Contract Co., of Seattle, for \$65,396. Next lowest bid was for \$68,758 submitted by K. G. Lundstrum, and third was for \$69,389 presented by J. W. Morris. Other bids were: Elwood Wiles, \$71,305; Pearson Construction Co., \$74,887; Pacific Bridge Co., \$71,483; Portland Concrete Pile & Equipment Co., \$79,739; Bidewell-Hayden & Co., \$76,451; Jahn Contracting Co., \$73,869; Biebsch & Joplin, \$78,997; Graff Construction Co., \$71,881. Lowest bid was over \$6,000 over estimate of the City Engineer. Proposals have been referred to City Engineer for tabulation.

#### MISCELLANEOUS

**Anniston, Ala.**—Board of Calhoun County Commissioners has decided to erect new county jail; estimated cost, \$25,000 to \$30,000.

**Los Angeles, Cal.**—New York syndicate, headed by bond firm of Speyer & Co., has purchased \$3,000,000 harbor bonds.

**Venice, Cal.**—Another bond election will be held in Venice April 4. The call informs voters that they will be given opportunity to approve issue of \$43,000 proposed for improvement of garbage and sewer system.

**Washington, D. C.**—Appropriation of 200,000 is recommended for construction of municipal hospital.

**Atlanta, Ga.**—Bond issue for complete system of parks and playgrounds for city is being favorably considered by Committee of Chamber of Commerce on parks and playgrounds.

**Atlanta, Ga.**—Specifications for new crematory, as prepared by special committee of Board of Health, have been submitted to Board and accepted. They will at once be advertised and bids will be asked from all crematory manufacturers in country. Cost of such plant is expected to run from \$200,000 to \$400,000.

**Augusta, Ga.**—Installation of police alarm system has been authorized.

**Omaha, Neb.**—Bond issue of \$538,500 has been authorized; \$50,000 for park improvements.

**Cairo, Ill.**—Ordinance has been passed providing for issuance of \$15,000 bonds for erection of public library.

**Cairo, Ill.**—Ordinance has been passed providing for issuance of \$75,000 bonds for erection of city hall and jail.

**Chicago, Ill.**—Citizens will vote on \$9,689,000 bond issue at special election, as follows: Construction of an outer harbor, \$5,000,000; building new and improving old police stations, \$2,245,000; new houses and lots for fire department, \$1,814,000; new bath houses and new contagious disease hospital, \$380,000; purchasing and constructing bathing beaches, \$250,000; total, \$9,689,000.

**Fort Wayne, Ind.**—Formal request from Park Board to City Council for permission to issue bonds for \$200,000 for purchasing of strips of river bank for boulevard purposes will be made.

**Indianapolis, Ind.**—Appropriation of \$5,000 is being considered for improvements to city market house.

**South Bend, Ind.**—Leasing and the ultimate purchase of 42 acres of additional land for park purposes, which is first step in carrying out of plans of George E. Kessler, landscape architect, for boulevard and enlarge park system in South Bend, have been approved by City Council Committee.

**Council Bluffs, Ia.**—Proposition of covering Indian Creek, from west side of central fire station to east side of Beno wall, is under consideration; estimated cost, \$20,000.



**Des Moines, Ia.**—Council has voted \$50,000 for erection of city market house.

**Sioux City, Ia.**—A 10-year lease of Sawyer property in West Morningside, which is to be used as detention hospital, has been authorized by City Council.

**Barboursville, Ky.**—Jackson County will have a new jail building. Bids will be asked for within the next few days, and new building will be constructed at once.

**Rockville, Md.**—Erection of new jail is being considered.

**Hyattsville, Md.**—Special election will be held March 11 for voting on \$7,000 loan for purpose of erecting and equipping building for municipal and fire department purposes.

**Boston, Mass.**—Mayor's office has petitioned Legislature for authority to erect new city hall annex on Court st. to height of 133 ft.

**Lowell, Mass.**—City Engineer will prepare plans for comfort station in vicinity of Paige and Bridge sts.

**Lynn, Mass.**—Order has been adopted by Municipal Council directing Building Department to prepare plans and specifications for remodeling of Sutton st. police station.

**New Bedford, Mass.**—City is considering erection of hospital to cost about \$131,000 to \$140,000.

**Salem, Mass.**—In Salem Board of Aldermen order has been introduced for appropriation of \$100,000 for purchase of site, for plans and erection of building to be used for police station, district court and headquarters for electrical department, money to be raised by bond issue.

**Harbor Beach, Mich.**—Harbor Beach voted by majority of four to one to erect new \$20,000 city hall to replace old structure burned last November.

**Kalamazoo, Mich.**—People will vote at spring election on \$36,000 bond issue for new police station, and \$3,000 for central public comfort station.

**Kalamazoo, Mich.**—Erection of new jail is being discussed.

**Saginaw, Mich.**—New county jail and detention home for boys is recommended.

**Chillicothe, Mo.**—New court house will probably be erected, to cost about \$100,000.

**Duluth, Minn.**—Ordinance authorizing issuance of \$50,000 of park bonds has been passed without opposition.

**Jefferson City, Mo.**—Board of Prison Inspectors have approved plans for new \$350,000 cell building and \$50,000 refrigerator building to be constructed for Penitentiary. Work will begin on two structures at once.

**St. Joseph, Mo.**—Ordinances have been introduced for extension of Bartlett Park, and creation of playground on Noyes blvd.

**Millburn, N. J.**—Township Committee will spend \$30,000 for erection of municipal building.

**Newark, N. J.**—Bill has been passed authorizing issuance of \$350,000 additional bonds for park purposes in Essex County.

**Buffalo, N. Y.**—Small Park Commission has voted to recommend to Common Council that city buy Rumsey Park for \$60,000. Commission also voted to report in favor of city buying park site at Broadway and Peckham st. for \$145,000, and one at Hollister and Mortimer sts. for \$130,000.

**New York City, N. Y.**—Park Commissioner Higgins, of The Bronx, will ask Board of Estimate and Apportionment for \$100,000 to create lake in Pelham Bay Park on Hunter's Island. Commissioner Higgins, in discussing his plans yesterday, said lake would be salt water one about mile and a half long and have depth of about six ft.

**New York City, N. Y.**—Park Commissioner Stover has announced plans for eight more playgrounds which, with those already completed and nearing completion, will make total of 18 play centers projected for city during his administration up to present time, representing outlay of approximately \$300,000.

**Niagara Falls, N. Y.**—County Building Committee of Board of Supervisors have directed Chairman A. C. Dwyer to secure competitive plans and specifications and estimate of cost on remodeling present county almshouse into modern structure to accommodate 300 inmates.

**Schenectady, N. Y.**—Plans and specifications drawn by Architect William J. Beardsley for proposed county jail, to be erected adjoining new county court house, are being discussed by Board of Supervisors.

**Cincinnati, O.**—Ordinances authorizing bond issues in sum of \$140,000, part of improvements contemplated in issues under review by Council Committees, will be recommended for passages.

**Cleveland, O.**—Bids will be received until 12 noon, March 18, at office of City Auditor, for purchase of \$18,000 park coupon bonds, and \$145,000 park coupon bonds.

**Dayton, O.**—Plans outlined by various departments of municipal government for present year contemplate expenditure of about \$350,000.

**Dayton, O.**—Council has voted to issue bonds in sum of \$3,200 for purchase of constructing retaining wall at Stewart st. bridge, and \$9,000 for improvement of McKinley Park.

**Dayton, O.**—City Engineer Cummin has announced that river straightening proposition has been completed and will be submitted to City Council. He says that plans he has made do not entail any change in former arrangement, and that he will ask for bond issue in sum of \$450,000, same amount to which people gave their sanction at polls.

**Niles, O.**—Western Reserve National Bank of Warren was awarded \$15,000 worth of bonds sold by Park Commission.

**Springfield, O.**—People will vote on May 21 on \$50,000 bond issue for lake at Snyder Park.

**Youngstown, O.**—Plans are being drawn by Architects Stanley & Shibel, acting in conjunction with prominent Boston architect, for addition of four-story annex to City Hospital; estimated cost, \$100,000.

**Portland, Ore.**—Ordinance has been introduced in Council for establishment of public market on old market block. Committee on Public Markets introduced resolution providing for submission to voters of charter amendment calling for issuance of \$200,000 bonds for establishing public markets in various parts of city. This was referred to Judiciary Committee.

**Altoona, Pa.**—City Engineer Engstrom states that work of preparing plans and specifications for extension of piers for 7th st. bridge will be completed and ready to be submitted shortly to Board of Public Works. Board will at once advertise for bids.

**Chester, Pa.**—Erection of new City Hall is being discussed.

**Chester, Pa.**—Public Property Committee will recommend to Councils adoption of plans for erection of shelter shed for general public on new pier on Market st.

**Erie, Pa.**—Installation of garbage collection system and incinerating plant have been authorized.

**Erie, Pa.**—Recommendations will be made to Councils by Special Garbage Committee that garbage be disposed of by incineration in plant owned by city; that garbage be collected by city at expense of city; and that one mill be added to present tax rate provided money now available does not prove sufficient to install service.

**Pittsburgh, Pa.**—The Shade Tree Commission is asking for bids on 6,600 trees, including Oriental planes, ginkgo trees, Norway maples, sweet gums, pin and red oak, lindens, elms, red maples and Lombardy poplars. Commission is planning 17 miles of planting of this spring with trees installed about 40 ft. apart.

**Sioux Falls, S. Dak.**—One of greatest bond issues ever made in South Dakota

has just been sold by City Commissioners of Sioux Falls to Chicago men. The bonds aggregate \$300,000.

**Dallas, Tex.**—Commissioners have decided to erect three public comfort stations near proposed city hall building on Main, Commerce and Harwood sts.

**Fort Stockton, Tex.**—Commissioners' Court has decided to remodel court house and jail, at estimated cost of \$60,000 on former and \$15,000 on latter.

**Temple, Tex.**—City has contracted for erection of garbage crematory and incinerator plant at cost of \$5,000.

**Texarkana, Tex.**—Erection of municipal abattoir is being considered; cost, \$25,000.

**Chattanooga, Tenn.**—National Life Insurance Co., of Montpelier, Vt., has been awarded \$50,000 worth of Hamilton County court house and jail bonds.

**Chattanooga, Tenn.**—Members of Municipal Commission have passed resolution asking that election for purpose of determining will of people in regard to \$250,000 park bond issue be held on March 26.

**Norfolk, Va.**—Appropriation of \$2,000 will be considered by Finance Committee for purchase of combined motor patrol wagon and ambulance.

**Petersburg, Va.**—Board of Aldermen has adopted resolution providing for bond issue of \$200,000 to be voted on at June election; \$25,000 will be for crematory; \$25,000 6th Ward school house, and \$25,000 city almshouse.

**Racine, Wis.**—Board of Public Works will be instructed to advertise for bids on garbage incinerator.

**Cheyenne, Wyo.**—Resolution has been introduced for purchase of lot and erection of building for new city hall to cost about \$60,000.

#### CONTRACTS AWARDED

**Michigan City, Ind.**—By Board of Police Commissioners, for auto patrol and ambulance combined, to Kelly Motor Truck Co., of Springfield, O., at \$3,300.

**Boston, Mass.**—For collecting and removing ashes in West Roxbury District for 1912, to Joseph McGreevey, at \$8,240. Other bids were: John T. Moore, \$8,400; Thomas J. Shea Co., \$8,940; Joseph Sprissler, \$8,988. Collection and removal of offal in West Roxbury District for one year, to John Newbury, at \$2,940. Other bids were: T. Walter Griffin, \$3,472; Fred Krug, \$3,480.

**Kingston, N. Y.**—By City, for cleaning Ashokan reservoir section, to Cogan & Co., at \$451,000. Other bidders were King & Ganey, \$549,650; Winston & Co., \$569,125; Mead & Co., \$674,000; Harrison & Burton and Boice & Tully, \$740,000. Ex-Sheriff Boice is a member of Boice & Tully. Cogan & Co.'s bid was \$30 an acre for clearing 9,500 acres; \$60 an acre for grubbing 2,400 acres; 30 cents a yd. for excavating 40,000 cu. yds. of earth; planting and seeding 150 acres, \$20 an acre; second cutting of 400 acres, \$5 an acre; removing 1,000 cu. yds. of objectionable soil, \$5 a cu. yd.

**Poughkeepsie, N. Y.**—By City, for removing garbage and ashes for one year, to Charles F. Senk, at \$6,400.

**Tonawanda, N. Y.**—By City, for collection of garbage, to Henry Garlock, at \$1,500.

**Newport, R. I.**—By Board of Aldermen, for collection of garbage for one year, to P. H. Welch. Bids as follows: James J. Dugan asked \$12,000 for one year or \$34,000 for three years. He is the former contractor for this work. Joseph Levitre asked \$8,700 for one year, \$26,700 for three years, or \$45,200 for five years. John H. Sullivan asked \$7,981 for one year, \$23,981 for three years, or \$40,000 for five years. The P. H. Welch Co. asked \$5,100 for one year, \$16,200 for three years, or \$27,000 for five years.

**Chattanooga, Tenn.**—Election will be held March 26 for voting on \$250,000 bond issue for public park purposes.

#### CURB COCKS—GOOSENECKS—CORPORATION COCKS



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GLAUBER BRASS MFG. CO., CLEVELAND OHIO

## TOO LATE FOR CLASSIFICATION

## BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
<b>STREET IMPROVEMENTS</b>				
Indiana.....	Bruceville.....	Mar. 9, 1 p.m.....	Constrn. 1,700 ft. of walk.....	Sidewalk Comm.
Louisiana.....	New Orleans.....	Mar. 11, noon.....	Constrn. 9½ miles of road.....	State Highway Dept.
Oklahoma.....	Muskogee.....	Mar. 26, 10 a.m.....	Pavg. with bituminous concrete.....	Chas. Wheeler, City Clk.
<b>SEWERAGE</b>				
Ohio.....	Akron.....	Mar. 19, noon.....	Constrn. main trunk sewer.....	R. M. Pillmore, Dir. Pub. Serv.
South Dakota..	Sioux Falls.....	Mar. 26, 11 a.m.....	Constrn. west side sewer.....	City Commissioners.
<b>FIRE EQUIPMENT</b>				
New Jersey....	South Orange....	Mar. 8, 8 p.m.....	Furn. 500 ft. 2½-in. fire hose.....	Oscar Schoenherr, Chm.
Ohio.....	Cleveland.....	Mar. 18, noon.....	Furn. 26,836 ft. underground lead cables.....	C. W. Stage, Dir. Pub. Safety.
<b>BRIDGES</b>				
New Jersey....	Camden.....	Mar. 11, 11 a.m.....	Bldg. abutment.....	F. W. Gercke, Chm. Comm.
New Jersey....	Long Branch.....	Mar. 13, 11 a.m.....	Bldg. wooden bridge.....	J. N. Corlies, Dir. Freeholders.
New Jersey....	Paterson.....	Mar. 20, 2 p.m.....	Bldg. concrete culvert and bridges.....	W. H. Mason, Chm. Freeholders.
N. Hampshire..	Berlin.....	Mar. 21, 8 p.m.....	Erectg. superstructure of two 116-ft. bridges.....	L. J. Wertheim, City Engr.
<b>MISCELLANEOUS</b>				
New York.....	Rochester.....	Mar. 11, 11 a.m.....	Furn. automobile for sheriff's dept.....	T. J. Bridges, Chm.
Cuba.....	Santiago.....	May 6.....	Constrn. 6,400 meters of tramway.....	La Jefatura del Distrito de Oriente.

## STREET IMPROVEMENTS

**Manhattan, Cal.**—Plans are being considered for building of six or seven miles of streets.

**Oak Park, Cal.**—Petition is being circulated asking for permanent improvements of 35th st and Sacramento ave.

**Wilmington, Del.**—Extensive street paving is planned by City Council.

**Rome, Ga.**—Paving and laying of new sidewalks on Broad st. have been authorized.

**Evansville, Ind.**—Residents of Outer Green River rd are circulating petition for widening of road from Governor st. to Kentucky ave. This petition is preparatory to petition which will be presented for sidewalks along that part of road.

**Fort Wayne, Ind.**—Plans have been ordered for laying sidewalks on State st. and Columbia ave. bridges.

**Indianapolis, Ind.**—Resolutions have been adopted for improvement of various streets.

**Rockville, Md.**—Opening of road from Bethesda at Bradley lane to Great Falls, distance of nine miles is being discussed.

**Hastings, Mich.**—City Council is preparing to submit to voters at spring election proposition to bond city for \$25,000, for paving Jefferson and Green sts., two principal residence thoroughfares. The residence owners to be benefited will pay \$21,550, and city at large \$4,050.

**Iron River, Mich.**—City is contemplating paving six blocks on Genessee st. this coming summer, and arrangements will be taken up immediately after spring election on April 18. J. B. Henley, Clerk.

**Lowell, Mich.**—Plans have been prepared for street paving to cost about \$20,000.

**St. Louis, Mo.**—Board of Public Improvements is planning following improvements: Wood—Taylor ave., Forest Park to Maryland, \$13,613; Seventh st., Market to Washington, \$16,575. Bitulithic—King's Highway, Arsenal to Vandeventer and Old Manchester, \$38,091.

Brick—Goodfellow ave., North Market to Maffitt, \$10,103; Potomac st., Louisiana to Grand, \$13,725; North Market st., 15th to Glasgow, \$60,592; Walnut st., 17th to 18th, \$3,311; 17th st., Clark to Market, \$12,078; Angelica st., Wharf to First, \$21,338; Angelica st., First to 11th., \$13,238. Asphalt—North Market st., Goodfellow to Hamilton, \$9,281; 13th st., Bidle to Cass, \$15,078; 23d st., Washington to O'Fallon, \$26,498; Utah st., Michigan to Louisiana, \$9,011. Grading and construction of granitoid sidewalks on Virginia ave., between Meramec and Gasconade, except parts already paved with brick, stone or granitoid; class S; total cost, \$1,150.

**Atlantic City, N. J.**—Ordinances have been introduced for widening of Ventnor ave. to 80 ft., and paving of various streets.

**Spotswood, N. J.**—Mayor A. B. Appleby and Borough Clerk George W. De Voe have presented petition to Board of Freeholders for construction of macadam road in township of East Brunswick and this borough by county, from Fisher's corner to tracks of Camden and Amboy Railroad at Spotswood. Distance is about five miles. Matter has been referred to Road Committee.

**Herkimer, N. Y.**—Village paving bonds to amount of \$5,759.26 have been sold to First National Bank by President Grogan and Village Attorney Witherstine.

**Rochester, N. Y.**—Public Works Committee of Common Council will discuss ordinances for new pavements in Spring and Favor sts. Pavement in Spring st. is to extend from Exchange st. to Plymouth ave.

**Utica, N. Y.**—For continuation of boulevard easterly from Mohawk st. to Thomas H. Proctor Park, for lighting of boulevard at all street intersections and for building of various roads in Roscoe Conkling Park, members of Utica Park Board have decided to ask Common Council for bond issue of \$95,000.

**Akron, O.**—Improving and widening of East Market st. is being discussed.

**Barberton, O.**—Paving of Bolivar rd., First st. and all connecting streets is being planned.

**Cincinnati, O.**—Surveyor Cowen's estimate and plans for improvement of road between lands of Woltering and Birch in Green Township, at cost of \$1,224, have been approved.

**Niles, O.**—Board of Control authorized Director of Service Caldwell to advertise for bids on the Vienna ave. paving and Hyde st. sewer.

**Fort Worth, Tex.**—Seven kinds of paving material are asked for in bids by City Commission for paving Houston st., from Weatherford to 10th sts. Order for repaving of that street has been passed by City Commission, and under this order, bids will be asked for on following material: Creosoted wood block, bitulithic, vitrified brick, rock asphalt, asphaltic concrete, Bermudez or Trinidad Lake sheet asphalt and bituminous concrete.

## CONTRACTS AWARDED

**Waycross, Ga.**—To J. P. Vandewine & Co., Birmingham, Ala., for constructing approximately 50,000 sq. yds. of cement sidewalk, at 8 cents a sq. ft.

**Rock Island, Ill.**—To P. F. Trenken-schuk, Rock Island, for improving Sixth ave., from 35th st. to 54th st.

**Brownstone, Ind.**—By Board of Jackson County Commissioners, to Charles Kain, Medaryville, for construction of macadam road in Wheatfield, at \$25,999.

**Delphi, Ind.**—By Board of Carrol County Commissioners as follows for road construction: Macadam road in Deer Creek, to James F. Pierce, Delphi, at \$13,900; gravel road in Burlington, to Beal & Bell, Logansport, at \$13,230; gravel road in Jefferson, to Holoway & Mishner, Monticello, at \$3,600.

**South Bend, Ind.**—By Board of Public Works as follows: Portage ave., from Michigan Central viaduct to the first alley north of Kenyon st., to C. H. DeFreese, \$8,581.86; Walnut st., from Colfax ave. to Laporte ave., to C. H. DeFreese, \$8,975.55, and the resurfacing of South

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